



October 7, 2015

Bruce Suchomel  
Groundwater Program, Mail Code 8P-W-UIC  
U.S. Environmental Protection Agency  
1595 Wynkoop St  
Denver, CO 80202-1129

Dear Bruce,

Please consider this letter and the enclosures as an application for the Major Modification request for the east quarter of section 36 in T5S-R4W Uintah Special Meridian to Area Permit #UT20736-0000. The added area is on Tribal surface and Tribal mineral ownership. Petroglyph operates the injection system under Utah State's Enhanced Recovery Project spacing order, cause number 214-2. This spacing order includes the east quarter of section 36 in T5S-R4W in our Antelope Creek Project. Adding the Major Modification request area to the EPA Area Permit will make the Enhanced Recovery Project area concordant with the EPA Area Permit.

There is only one well in the Major Modification area, the Ute Tribal 36-08-E4. This well is in the permit process to be converted to an injection well, documentation was sent July 29<sup>th</sup>, 2015.

**In the ¼ mile AOR there are currently three oil wells:**

- Ute Tribal 36-02-E4 which is operated by Petroglyph Energy.
- Ute Tribal 16-25-54 which is operated by Linn Operating, Tribal Surface and Tribal Minerals.
- Federal 1-1D-64 which is operated by Linn Operating, Federal Surface (USFS) and Federal Minerals (USFS).



October 7, 2015

**Future oil wells to be drilled in the Major Modification area:**

- Ute Tribal 36-01-E4*
- Ute Tribal 36-09-E4*
- Ute Tribal 36-16-E4*
- Ute Tribal 36-08A-E4
- Ute Tribal 36-08i-E4
- Ute Tribal 36-16J-E4

The first three italicized wells are in the permit process with the BLM and State of Utah (as oil wells), and are also likely candidates for future injection wells after they have been drilled and produced.

**Future oil wells to be drilled in the ¼ mile AOR by Petroglyph:**

- Ute Tribal 36-07-E4
- Ute Tribal 36-10-E4
- Ute Tribal 36-15-E4

The enclosed map, "T5S-R4W Section 36 Major Modification Request" shows the above mentioned wells, the wells current status, current roads, current pipelines, proposed roads, proposed pipelines, and proposed wells with their pads for section 36.

The latitude and longitude coordinates for the corners of the east quarter of Section 36, in NAD83 coordinate system are:

**NE Corner:** 40.010369 and 110.275006

**NW Corner:** 40.010353 and 110.279678. Bearing S88°57'48"W-1308.41' from the NE Corner Section 36

**SW Corner:** 39.995908 and 110.279694. Bearing S89°12'19"W-1309.97' from the SE Corner Section 36

**SE Corner:** 39.995911 and 110.275019

These coordinates are also displayed on the "T5S-R4W Section 36 Major Modification Request" map.



October 7, 2015

Hyperlinked below are the Cement Bond Logs and Utah State's well files which have sundry information for the wells in the AOR:

**CBLs**

[Ute Tribal 36-02-E4](#)

[Ute Tribal 16-25-54](#)

[Federal 1-1D-64](#)

**Well Files**

[Ute Tribal 36-02-E4](#) API: 43013519310000

[Ute Tribal 16-25-54](#) API: 43013327790000

[Federal 1-1D-64](#) API: 43013505240000

These hyperlinks will take you the Division of Oil and Gas website, DOGM, where the CBLs and Well Files can either be viewed or downloaded.

An Archaeological Block Survey Report and an Environmental Assessment Report are also enclosed. Petroglyph believes these two reports will aid with the EPA's agency-to-agency consultations.

As stated in our first cover letter sent July 29<sup>th</sup>, 2015, Petroglyph does not have any record of application for the 1998 Major Modifications to the EPA Area Permit #UT20736-0000. Please give guidance on any documents or material which is needed for this Major Modification application. Feel free to contact me with any comments or concerns.

Sincerely,

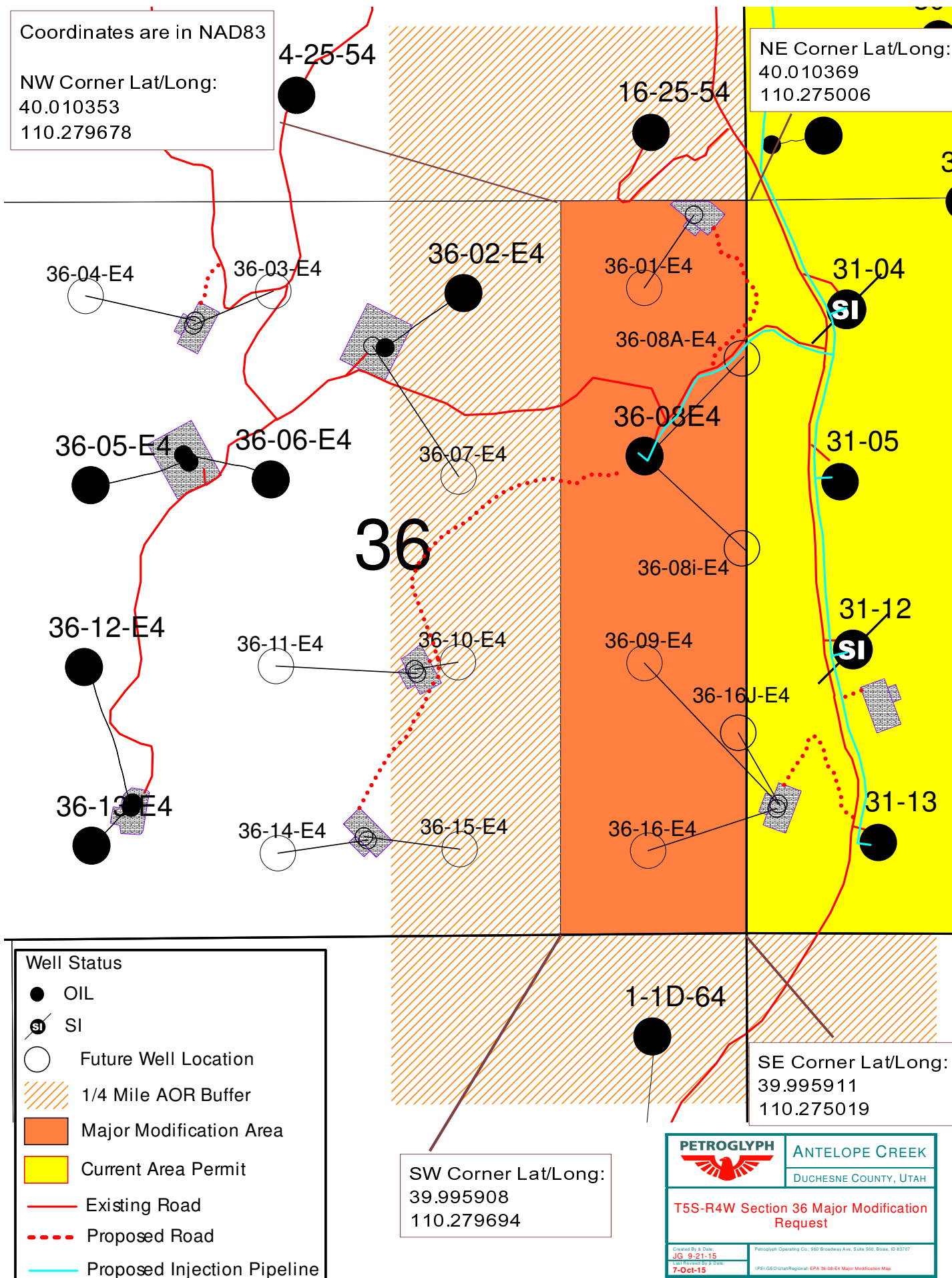
Jessica Graham  
Geologist  
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208-685-7634

Enclosures

Coordinates are in NAD83

NW Corner Lat/Long:  
40.010353  
110.279678

NE Corner Lat/Long:  
40.010369  
110.275006



CULTURAL RESOURCE INVENTORY OF  
PETROGLYPH OPERATING COMPANY'S  
BLOCK PARCEL IN SECTION 36,  
TOWNSHIP 5 SOUTH, RANGE 4 WEST  
DUCHESNE COUNTY, UTAH

CULTURAL RESOURCE INVENTORY OF  
PETROGLYPH OPERATING COMPANY'S  
BLOCK PARCEL IN SECTION 36,  
TOWNSHIP 5 SOUTH, RANGE 4 WEST  
DUCHESNE COUNTY, UTAH

By:

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and  
Hanna Romes

Prepared For:

Ute Indian Tribe  
(Uintah & Ouray Agency)

Prepared Under Contract With:

Petroglyph Operating Company  
4116 West 300 South Ioka Lane  
Roosevelt, Utah 84006

Prepared By:

Montgomery Archaeological Consultants, Inc.  
Moab, Utah 84532

MOAC Report No. 14-137

September 8, 2014

United States Department of Interior (FLPMA)  
Permit No. 14-UT-60122

State of Utah Antiquities Project (Survey)  
Permit No. U-14-MQ-0411i

Ute Tribal Permit No. A014-363

## ABSTRACT

Montgomery Archaeological Consultants, Inc. (MOAC) conducted a cultural resource inventory in 2014 for Petroglyph Operating Company's block parcel in Section 36, Township 5 South, Range 4 West, Duchesne County, Utah. The project area is located southeast of the town of Duchesne between Left Fork and Right Fork Antelope Canyon. The legal description is Township 5 South, Range 4 West, Section 36 (Figure 1). A total of 630 acres was surveyed for cultural resources on Ute Tribal land (Uintah and Ouray Agency). Petroglyph Operating Company proposes to develop a number of well locations with associated access and pipelines in the project area.

The inventory resulted in the documentation of seven archaeological sites (42Dc3686, 42Dc3687, 42Dc3688, 42Dc3689, 42Dc3690, 42Dc3691, and 42Dc3701). Four prehistoric sites are recommended eligible to the NRHP. Site 42Dc3686 is a surface quarry that retains good integrity and spatial patterning. It exhibits several different lithic tool types as well as a high density of debitage. This site is recommended eligible to the NRHP under Criterion D because it is likely to contribute to the understanding of aboriginal lithic production and resource utilization in the context of procurement, lithic technology, and land use patterns. Site 42Dc3687 is a discrete lithic scatter that retains good integrity and spatial patterning. It exhibits a diversity of lithic tools and moderate amount of debitage. The site is recommended eligible to the NRHP under Criterion D because it is likely to address such research domains as site function, lithic technology, and aboriginal lithic production systems. Site 42Dc3689 is a temporary camp that retains good integrity and spatial organization. It contains a moderate amount of artifacts with several tools and lies in loose sediments yielding potential for buried cultural remains. Therefore, this site is recommended eligible under Criterion D since it is likely to address such research domains as site function, lithic technology, cultural affiliation, and land use patterns. Site 42Dc3691 is a rock art panel displaying numerous petroglyph figures. This site is recommended eligible to the NRHP under Criterion C and D. The rock art panel embodies the distinctive characteristics of a type, period, and method of construction and may represent the work of a master, and possesses high artistic values (Criterion C). In addition, this site could be subject to further research including rock art style, thematic interpretations, chronology, and spatial analysis (Criterion D). One small surface quarry (42Dc3701) is recommended ineligible to the NRHP since it contains a minimal quantity and diversity of cultural materials. The site lacks temporal indicators, features, and potential for additional cultural remains, hence, it is unlikely to contribute to the prehistoric research domains of the area. Both of the historic sites consisting of a corral (42Dc3688) and an inscription panel (42Dc3690) are considered not eligible to the NRHP. These sites are not associated with events that have made a significant contribution to the broad patterns of our history or with the lives of persons significant to our past (Criteria A and B). Additionally, the sites do not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C). Furthermore, the sites are unlikely to contribute additional information important to the history of the area (Criterion D).

In conclusion, the cultural resource inventory of Petroglyph Operating Company's block parcel in Township 5 South, Range 4 West, Section 36 resulted in the documentation of seven archaeological sites (42Dc3686, 42Dc3687, 42Dc3688, 42Dc3689, 42Dc3690, 42Dc3691, and 42Dc3701). Four prehistoric sites (42Dc3686, 42Dc3687, 42Dc3689, and 42Dc3691) are recommended eligible to the NRHP. In accordance with Ute Tribal protocol all these sites including an ineligible surface quarry (42Dc3701) require avoidance from future ground disturbing undertakings. Based on adherence to the avoidance recommendation, a determination of "no historic properties affected" is proposed for the project pursuant to 36 CFR 800.

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## INTRODUCTION

Montgomery Archaeological Consultants, Inc. (MOAC) conducted a cultural resource inventory in 2014 for Petroglyph Operating Company's block parcel in Section 36, Township 5 South, Range 4 West, Duchesne County, Utah. The project area is located southeast of the town of Duchesne between Left Fork and Right Fork Antelope Canyon. The survey was implemented at the request of Mr. Ed Trotter, permitting consultant for Petroglyph Operating Company, Vernal, Utah. The project occurs on Ute Tribal land (Uintah and Ouray Agency). Petroglyph Operating Company proposed to develop a number of well locations with associated access and pipelines in the project area.

The objectives of the inventory were to locate, document, and evaluate any cultural resources within the project area in accordance with 36 CFR 800, the National Historic Preservation Act of 1966 (as amended). Also, the inventory was implemented to attain compliance with a number of federal and state mandates, including the National Environmental Policy Act of 1969, the Archaeological and Historic Preservation Act of 1974, the Archaeological Resources Protection Act of 1979, American Indian Religious Freedom Act of 1978, and the Utah State Antiquities Act of 1973 (amended 1990).

Amy Ackman (Field Supervisor) assisted by Hanna Romes, Scott Brannan, Brendan Fitzsimmons, and Jayson Gray conducted the fieldwork between June 23 and July 18, 2014 under the auspices of United States Department of Interior (FLPMA) Permit No. 14-UT-60122, State of Utah Antiquities Permit (Survey) No. U-14-MQ-0411i, and Ute Tribal Permit No. A014-363 issued to MOAC, Moab, Utah.

A file search for previous inventories and recorded archaeological sites was performed by Marty Thomas at the State Historic Preservation Office in Salt Lake City on May 1, 2014. This consultation indicated that one cultural resource inventory has been completed in the project area. In 1997, An Independent Archaeologist (AIA) inventoried Petroglyph Operating Company's Ute Tribal 36-8E-4W well location and access road resulting in no cultural resources (Truesdale 1997).

## DESCRIPTION OF THE PROJECT AREA

The project area is situated southeast of the town of Duchesne between Left Fork and Right Fork Antelope Canyon. The legal description is Township 5 South, Range 4 West, Section 36 (Figure 1). A total of 630 acres was surveyed for cultural resources on Ute Tribal land (Uintah and Ouray Agency).

### Environmental Setting

The project area lies within the Uinta Basin physiographic unit, a distinctly bowl shaped geologic structure (Stokes 1986). The Uinta Basin ecosystem is within the Green River drainage; considered the northernmost extension of the Colorado Plateau. The area is characterized by steeply sided, narrow ridges, and benches dissected by intermittent drainages. Outcrops of the Uinta Formation are characterized by a dense, dendritic drainage pattern and topographic relief. This Eocene age formation occurs as fluvially deposited, interbedded sandstone and mudstone and is well known for its fossil vertebrate turtles, crocodilians, fish, and mammals.

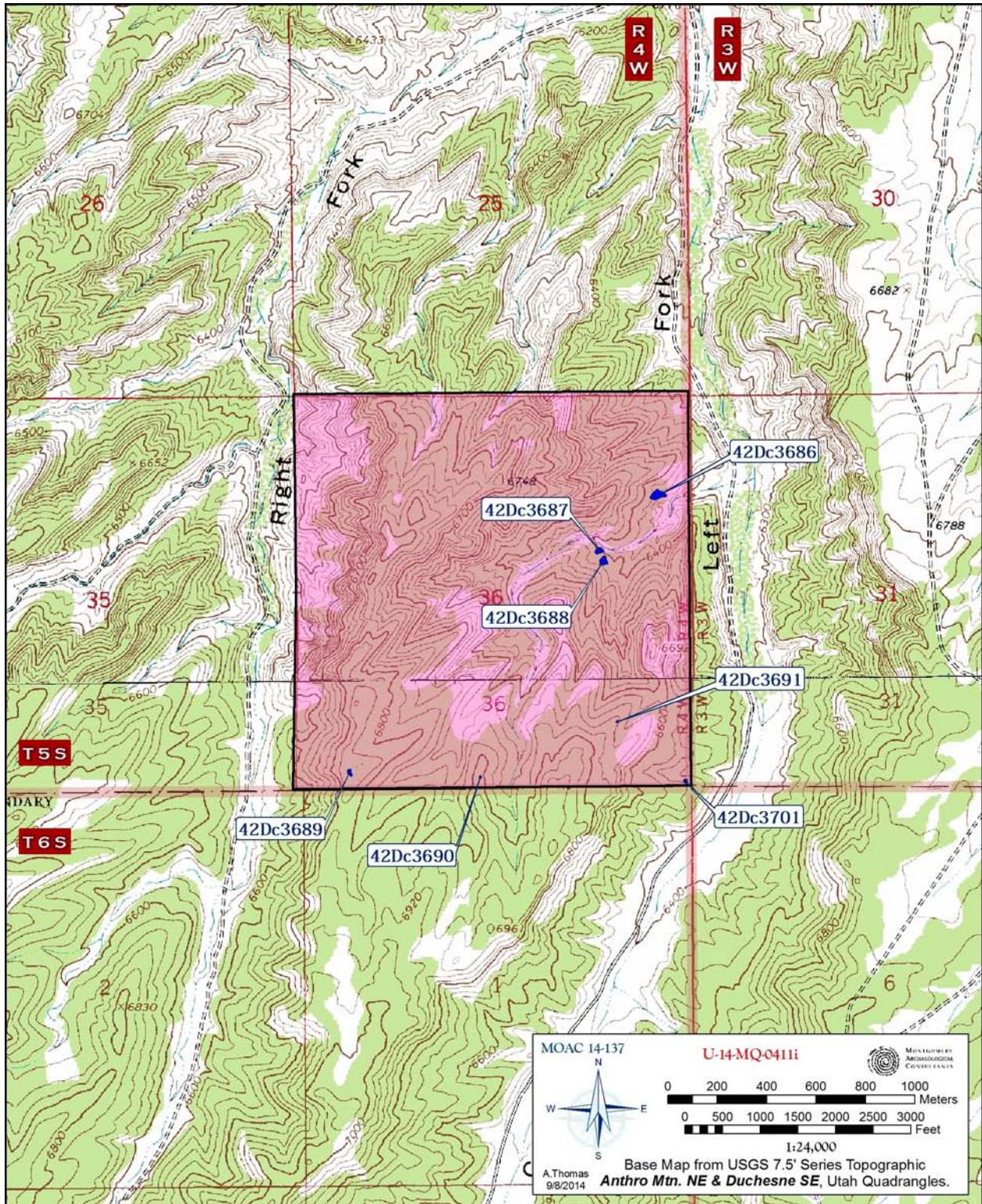


Figure 1. Petroglyph Operating Company's Block Parcel in Township 5S, Range 4W, Section 36 Showing Cultural Resources, Duchesne County, Utah.



The topography consists of high ridges, broken benches and ledges, shallow drainages, and Left Fork Antelope Canyon. The nearest water source is the Antelope Creek situated to the north. Elevation of the project area ranges between 6,280 and 6,880 ft asl. The sediments consist of loose to compacted silty sand overlaid by pebbles, gravel, and cobbles. Vegetation is dominated by a pinyon-juniper woodland with an understory of low sagebrush, Utah serviceberry, Mormon tea, and prickly pear cactus. Modern disturbances are limited to a few roads and oil/gas development.

### Cultural Overview

The cultural-chronological sequence represented in the area includes the Paleoindian, Archaic, Fremont, Protohistoric, and Ute Indian stages.

#### *Paleoindian Stage*

The earliest inhabitants of the region are representative of the Paleoindian stage (ca. 12,000-8000 B.P.), characterized by the adaptation to terminal Pleistocene environments and by the exploitation of big game fauna. The presence of Paleoindian hunters in the Uinta Basin region is implied by the discovery of Clovis and Folsom fluted points (ca. 12,000 B.P. - 10,000 B.P.), as well as the more recent Plano Complex lanceolate points (ca. 10,000 B.P. - 7000 B.P.). Evidence of Paleoindian exploitation of the Uinta Basin consists of isolated projectile points recovered from surface contexts. Documented Folsom points have been found at sites 42Dc221 and 42Dc353 near Roosevelt, Utah (Spangler 2002:218, 219). A variety of Plano Complex Paleoindian projectile points have been documented, including Goshen, Alberta, Hell Gap, and Midland styles (Hauck 1998). Spangler (2002:332) reports that there are no sealed cultural deposits in association with extinct fauna or with chronologically distinct Paleoindian artifacts in Utah. Based on the distribution of diagnostic projectile points, it appears that Paleoindian groups from the northwestern Plains and perhaps the Southwest included the Uinta Basin within their highly mobile hunting strategies.

#### *Archaic Stage*

The Archaic stage (ca. 8000 B.P.-1500 B.P.) is characterized by the dependence on a foraging subsistence, with peoples seasonally exploiting a wide spectrum of plant and animal species in different ecozones. The shift to an Archaic lifeway was marked by the appearance of new projectile point types, and the development of the atlatl, perhaps in response to a need to pursue smaller and faster game (Holmer 1986). In the Uinta Basin, evidence of Early Archaic presence is relatively sparse compared to the subsequent Middle and Late Archaic periods. Early Archaic (ca. 6000-3000 B.C.) sites in the Basin include sand dune sites and rockshelters primarily clustered in the lower White River drainage (Spangler 2002:373). Early Archaic projectile points recovered from Uinta Basin contexts include Pinto Series, Humboldt, Elko Series, Northern Side-notched, Hawken Side-notched, Sudden Side-notched and Rocker Base Side-notched points. Excavated sites in the area with Early Archaic components include Deluge Shelter in Dinosaur National Monument, and open campsites along the Green River and on the Diamond Mountain Plateau (Spangler 2002:374).

The Middle Archaic (ca. 3000-500 B.C.) is characterized by improved climatic conditions and an increase in human population on the northern Colorado Plateau. Several stratified Middle Archaic sites have been excavated and dozens of sites have been documented in the Uinta Basin. Middle Archaic sites in the area reflect cultural influences from the Plains, although a Great Basin and/or northern Colorado Plateau influence is represented in the continuation of the Elko Series

projectile points. Subsistence data from Middle Archaic components indicate gathering and processing of plants as well as faunal exploitation (e.g., muledeer, antelope, bighorn sheep, cottontail rabbit, muskrat, prairie dog, beaver and birds).

The Late Archaic period (ca. 500 B.C.-A.D. 550) in the Uinta Basin is distinguished by the continuation of Elko Series projectile points with the addition of semi-subterranean residential structures at basecamps. By about A.D. 100, maize horticulture and Rose Springs arrow points had been added to the Archaic lifeway. The transitional period from the Archaic to Formative lifeways in the Uinta Basin ca. AD 200-400 is well-dated at Steinaker Gap (north of Vernal) by ephemeral structures, bell-shaped storage pits, irrigation ditches, and burials (Talbot and Richens 2004). It is postulated that a very rapid acceptance and implementation of a farming strategy took place in northeastern Utah; introduced by small-scale migrations of Basketmaker farmers interacting with the indigenous hunter-gatherers (Talbot and Richens 2004:77). By AD 250, the occupants of Steinaker were already growing both corn and squash.

### *Formative Stage*

The Formative stage (A.D. 500-1300) is recognized in the area as the Uinta Fremont as first defined by Marwitt (1970). This stage is characterized by a reliance upon domesticated corn and squash, increasing sedentism, and in its later periods, substantial habitation structures, pottery, and bow and arrow weapon technology. Traits considered unique or predominate to the Uinta Basin include calcite-tempered pottery, two-handled wide-mouth vessels, Utah type metates, the use of gilsonite for pottery repair, settlement on tops of buttes, and large-shouldered bifaces (Shields 1970). Based on the evidence from Caldwell Village (AD 550-650), the Goodrich Site (AD 700-900), Whiterocks Village (AD 900), the Gilbert Site (AD 650-850), and others, the temporal range of the Uinta Fremont appears to be from AD 550 to 950 (Spangler 2000). Possible irrigation ditches were present at Caldwell, and stable carbon isotope analysis on four human burials from the site indicate that C<sub>4</sub> resources (including corn) comprised about 75 percent of the diet of these individuals (Coltrain 1993). The Uinta Fremont villages are characterized by shallow, saucer-shaped pithouse structures with randomly placed postholes and off-center firepits, some of which were adobe-rimmed. Small temporary use sites, including campsites, lithic scatters, hunting blinds, etc., are common throughout the region but in particular in the foothills and upland areas.

### *Protohistoric Stage*

Archaeological evidence suggests that Numic peoples appeared in east-central Utah at approximately A.D. 1100 or shortly before the disappearance of Formative-stage peoples (Reed 1994). The archaeological remains of Numic-speaking Utes consist primarily of lithic scatters with low quantities of brown ware ceramics, rock art, and occasional wickiups. The brownware ceramics appear to be the most reliable indicator of cultural affiliation, as Desert Side-notched and Cottonwood Triangular points were manufactured by other cultural groups beside the Ute (Horn, Reed, and Chandler 1994:130). Other possible diagnostic Numic artifacts include "Shoshonean knives" which are leaf-shaped chipped stone bifaces with relatively wide bases and tapering blades. They are bilaterally resharpened on both sides of the distal end of the blade. Although these tools may be affiliated with the Shoshone group of Eastern Nevada and Wyoming, similar bifaces are common throughout much of central Utah. The function of these tools is unknown, although some exhibit glossy wear over the blade suggesting the cutting of soft tissues such as meat, while others exhibit wear and distal breaks that suggest use as drills (Janetski 1994). Another argument for the distinct shape of these knives is that it is a function of continual resharpening while hafted.

The early Utes in Uintah County were Uinta-ats, a small band of a few hundred members (Burton 1996:20). In pre-horse days, Ute family groups lived largely independent of others; with key gathering, hunting, and fishing sites being communal and granted to all within both the local and extralocal Ute communities (Burton 1996:340). According to Smith's (1974) informants both deer and buffalo were important game for the White River Ute band. Before the buffalo became extinct in the Uinta Basin in the 1830s, the Ute would make trips northeast of Fort Bridger in the vicinity of what is now Rock Springs and Green River, Wyoming using the horse to surround and drive the buffalo over a precipice (Smith 1974; Callaway, Janetski, and Stewart 1986). Small mammals, rodents, fish, birds, and insects were also procured, although this subsistence strategy was more evident among the Uintah Utes than among the Yampa or Uncompahgre Utes (Spangler 1995:742). All Ute groups made tripod or conical houses with a three or four-pole foundation and a circular ground plan (some 10-15 feet in diameter), a covering of brush or bark, and cooking or heating fires in shallow pits both inside and outside of the huts (Smith 1974). The utilization of these structures apparently continued even after the introduction of the tipi (Spangler 1995:745). Three types of storage facilities were used by Ute groups in the area. One involved the construction of pits in cliff overhangs or shelters with rawhide or woven sagebrush bark bags containing food items stashed within them (Spangler 1995:746). The storage pit was then covered with soil and a fire was constructed over the top to destroy evidence the pit had been excavated (Smith 1974:67). A second strategy involved the construction of platforms made of sticks of coniferous trees with foliage thick enough to protect the cache from inclement weather (Spangler 1995:746). When the sacks had been placed on the platform they were usually covered with cedar bark, so that the rain would drain off (Smith 1974:67). A third strategy involved storage platforms about 5 ft high placed outside the brush shelters and tipis (Spangler 1995:746). These platforms, erected on poles, were either slightly sloping or flat and hollowed out with the platforms made of bound together sagebrush (Smith 1974:68).

The seeds of nut pines, including the double-needled pinyons (*Pinus edulis*) were highly prized by the Utes in the area, especially in years of abundance (occurring in 3-7 year cycles). Harvest began in the late summer with the gathering of green cones, using long hooked and straight harvesting poles. According to Smith (1974:66), the long poles were used to beat the tree limbs and dislodge the cones, which fell to the ground and were gathered. The nuts were either shaken or beaten from the cones. Cones were usually transported to a central processing station in large conical baskets (Fowler 1986:65). The green cones were then pit roasted, causing their bracts to open and their seeds to be partially released (Fowler 1986:65). Pinyon nuts were also contained in a flat basket with hot coals and shaken until the shells popped off. After the nuts were winnowed, they were often ground on a metate with the meal being stored for the winter (Smith 1974:66).

### Early Ute History

On May 5, 1864, Congress passed a law confirming the 1861 executive order setting up the Uintah Reservation (Burton 1996:24). This treaty provided that the Ute people give up their land in central Utah and move within one year to the Uintah Reservation without compensation for loss of land and independence. The Uinta-ats (later called Tavaputs), PahVant, Tumpanawach, and some Cumumba and Sheberetch of Utah were gathered together at the Uintah agency during the late 1860s and early 1870s to form the Uintah Band (Ibid 18-19). In the 1880 treaty council the White River Utes, who had participated in the Meeker Massacre, were forced to sell all their lands in Colorado, and were moved under armed escort to live on the Uintah Reservation (Callaway,

Janetski, and Stewart 1986:339). Shortly thereafter, 361 Uncompahgre Utes were forced to sell their lands, and were relocated to the Ouray Reservation adjacent to the southern boundary of the Uintah Reservation. This area embraced a tract of land to the east and south of the Uintah Reservation below Ouray lying east and south of the Uintah Reservation and east of the Green River. A separate Indian Agency, established in 1881 with headquarters at Ouray, was erected across the river from where the first military post, Fort Thornburgh was located. The infantry who participated in the relocation of the Colorado Indians ensured that the Uncompahgre and White River Utes remained on the two reservations (Burton 1996:28). The Dawes Severalty Act of 1887, opened the reservation to mineral exploration. When gilsonite was discovered in the Uinta Basin in the late 1800s, Congress was persuaded to apportion 7,040 acres from the reservation so the mineral could be mined.

## SURVEY METHODOLOGY

An intensive pedestrian survey, which is considered 100 percent coverage, was performed for this project. The project area was inspected for cultural resources by the archaeologists walking parallel transects spaced no more than 15 m (33 ft) apart. Ground visibility varied from fair to good. A total of 630 acres was surveyed on Ute Tribal land (Uintah and Ouray Agency).

Cultural resources were recorded as archaeological sites, which are spatially definable areas with features and/or ten or more artifacts. Sites were documented by archaeologists walking transects across the site, spaced no more than three meters apart. At the completion of the surface inspection, a Trimble GeoXH GPS receiver was employed to map the sites, including diagnostic artifacts and other relevant features and tools in reference to the site datum. Archaeological sites were photographed, with site data entered on an Intermountain Antiquities Computers System inventory form (IMACS 1990 version; Appendix A). An aluminum-capped rebar stake stamped with the permanent or temporary site number was placed at each of the sites. Isolated finds are defined as individual artifacts or light scatter of items, which lack sufficient materials to warrant IMACS forms, or to derive interpretation of human behavior in a cultural and temporal context. All isolated artifacts are described in this report.

## INVENTORY RESULTS

The cultural resource inventory resulted in the documentation of seven archaeological sites (42Dc3686, 42Dc3687, 42Dc3688, 42Dc3689, 42Dc3690, 42Dc3691, and 42Dc3701).

<u>Smithsonian Site No.:</u>	42Dc3686
<u>Site Type:</u>	Surface Quarry
<u>Cultural Affiliation:</u>	Unknown Aboriginal
<u>NRHP Eligibility:</u>	Eligible, Criterion D

Description: This is a surface quarry of unknown aboriginal affiliation situated on a narrow bench below a ridge along the west side of Left Fork Antelope Canyon. The site lies within a pinyon-juniper woodland with an understory of low sagebrush, prickly pear cactus and yucca. Sediments are compacted tan silty sand overlaid with cobbles and boulders. The source material occurs as fist size or larger nodules of tan and orange mottled siltstone. A total of 230 pieces of debitage was analyzed representing all reduction stages although primary and secondary flakes are dominate. Tools include a biface, a chopper, one utilized flake, a retouched flake and seven mainly prepared cores. The site contains numerous other cores besides those analyzed. The vast majority of the artifacts are manufactured from the local siltstone.

Smithsonian Site No.: 42Dc3687  
Site Type: Lithic Scatter  
Cultural Affiliation: Unknown Aboriginal  
NRHP Eligibility: Eligible, Criterion D

Description: This is a lithic scatter of unknown aboriginal affiliation situated on a narrow bench below a ridge along the west side of Left Fork Antelope Canyon. The site lies within a pinyon-juniper woodland with an understory of low sagebrush, prickly pear cactus and Utah serviceberry. Sediments are compacted tan silty sand overlaid with cobbles and pebbles. This is a locality where the local tan and orange mottled siltstone was acquired off-site and further reduced into expedient tools prehistoric peoples. A total of 92 pieces of debitage was analyzed representing all reduction stages although primary and secondary flakes are dominate. Tools include three early stage bifaces, a scraper, four utilized flakes, one core and a tested cobble.

Smithsonian Site No.: 42Dc3688  
Site Type: Corral  
Cultural Affiliation: Ute or Euro-American  
NRHP Eligibility: Not Eligible

Description: This is a brush corral of either Ute Indian or European American cultural affiliation situated on a bench below a ridge on the west side of Left Fork Antelope Canyon. Sediments consist of compacted tan silt sand with a dense overlay of gravel and cobbles. Vegetation includes pinyon, juniper, low sagebrush, and Utah serviceberry. Feature A is a brush corral consisting of a main enclosure and a holding pen. The main corral measures 65 ft by 65 ft and consists of piled pinyon and juniper axe cut and torn-off branches stacked a maximum of 7 ft high. The informal walls are supported by live trees which are incorporated into the corral. The north side of the enclosure is fairly open and a holding pen occurs a short distance to the northwest. The small enclosure measures 25 ft (E-W) by 15 ft (N-S) and is constructed in the same style as the larger enclosure. The structure is fairly intact impacted mainly by water rills. No artifacts were observed associated with the corral. The site was either used for the temporary containment of wild horses or livestock.

Smithsonian Site No.: 42Dc3689  
Site Type: Prehistoric Temporary Camp  
Cultural Affiliation: Unknown Aboriginal  
NRHP Eligibility: Eligible, Criterion D

Description: This is a small temporary camp of unknown aboriginal affiliation located along the top and sides of a narrow ridge overlooking Right Fork Antelope Canyon. The site lies within a pinyon-juniper woodland with an understory of low sagebrush and Mormon tea. Sediments are loose compacted tan silty sand overlaid with pebbles. Cultural remains consists of two chipped stone tools, lithic debitage, and a rock alignment. A total of 100 pieces of debitage were analyzed across the site representing all reduction stages, although secondary and tertiary flakes appear more prevalent. Tools consists of a Stage III biface and one utilized flake. Material types include tan chert and dark gray chert. Feature A is an informal rock alignment consisting of 14 unmodified large to medium sandstone slabs within a 91 cm by 91 cm area. The majority of the stones are laying flat on the surface with several partially buried. No cultural fill was observed. The slabs are out-of-context, although the function of the alignment is undetermined.

Smithsonian Site No.: 42Dc3690  
Site Type: Historic Inscriptions  
Cultural Affiliation: European American  
NRHP Eligibility: Not Eligible

Description: The site consists of a number of Euro-American inscriptions scratched on a prominent sandstone outcrop along a ridge between the Left Fork or Right Fork Antelope Canyon. Surrounding vegetation includes a pinyon-juniper woodland. The names and dates are scratched into a dark patinated face of the outcrop and a few are accompanied by symbols. The heights of the inscriptions range from 48 to 89 inches ags. They consist of the following names and dates: WHL 1912; Lloyd Coe, Tabiona 1919; Brent Bailey 1966-1991; Wendel Keel Dec 4 1931; Orien Brady Dec. 12 1929; FC Reynold Smart Lindsay; and 5 1926. No cultural materials were observed in the area.

Smithsonian Site No.: 42Dc3691  
Site Type: Prehistoric Rock Art  
Cultural Affiliation: Unknown Aboriginal  
NRHP Eligibility: Eligible, Criterion C & D

Description: The site consists of a single rock art panel with a number of zoomorphic, anthropomorphic and abstract petroglyphs located on a prominent outcrop overlooking Left Fork Antelope Canyon to the east. Situated on a southeast facing cliff face, the upper portion of the outcrop extends slightly over the panel. The cliff face is darkly patinated and relatively rough. Some of the images have been subjected to exfoliation and other weathering agents. Approximately 14 figures are stippled pecked, solid pecked, and a combination of both techniques have been rendered within a 193 (length) by 85 cm (height) area. The upper figures includes an outline of a rectangular bodied bighorn sheep (Exp. 9) with short stick-like legs, and curved-back horns. On the same level is a second lightly stippled bighorn sheep with an elongated round body. Separated by a crack in the cliff face is a small anthropomorph with outstretched arms, slightly splayed legs and a round head. The middle figures on the panel consist of a row two medium-sized squared bodied bighorn sheep followed by about five smaller bighorn sheep, all which are solidly pecked. At least three larger horned quadrupeds occur at the bottom of the panel, but due to exfoliation their physical characteristics are unclear. One abstract element (see Exp 10) is also present on the panel and consist of a row of six or more stipple pecked lines. Artifacts are limited to two decortication flakes and two secondary flakes manufactured from tan siltstone. The elements and composition of 42Dc3691 are reminiscent to Uncompahgre Style which has a broad temporal span (cal 1000 B.C. to A.D. 1000) (Cole 1990:86).

Smithsonian Site No.: 42Dc3701  
Site Type: Surface Quarry  
Cultural Affiliation: Unknown Aboriginal  
NRHP Eligibility: Not Eligible

Description: This is a limited activity surface quarry of unknown aboriginal affiliation situated on a narrow bench below a ridge along the west side of Left Fork Antelope Canyon. The site lies on compact residual sediments within a pinyon-juniper woodland. The source material consists of a sparse amount of light brown siltstone fist size or larger nodules. Cultural materials are limited to three cores, three utilized flakes, and 16 pieces of debitage. Debitage is represented mainly by primary and secondary flakes.



Table 1. Summary of Archaeological Sites with Recommendations.

Site Number	Site Type	NRHP Status	Recommendation
42Dc3686	Prehistoric Surface Quarry	Eligible, Criterion D	Avoid
42Dc3687	Prehistoric Lithic Scatter	Eligible, Criterion D	Avoid
42Dc3688	Historic Corral	Not Eligible	None
42Dc3689	Prehistoric Temporary Camp	Eligible, Criterion D	Avoid
42Dc3690	Historic Inscription	Not Eligible	None
42Dc3691	Prehistoric Rock Art	Eligible, Criteria C & D	Avoid
42Dc3701	Prehistoric Surface Quarry	Not Eligible	Avoid

## NATIONAL REGISTER OF HISTORIC PLACES EVALUATION

The National Register Criteria for Evaluation of Significance and procedures for nominating cultural resources to the National Register of Historic Places (NRHP) are outlined in 36 CFR 60.4 as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, material, workmanship, feeling, and association, and that they:

- a)...are associated with events that have made a significant contribution to the broad patterns of our history; or
- b)...are associated with the lives of persons significant to our past; or
- c)...embody the distinctive characteristics of a type, period, or method of construction; or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- d)...have yielded or may be likely to yield information important in prehistory or history.

The inventory resulted in the documentation of seven archaeological sites (42Dc3686, 42Dc3687, 42Dc3688, 42Dc3689, 42Dc3690, 42Dc3691, and 42Dc3701). Four prehistoric sites are recommended eligible to the NRHP. Site 42Dc3686 is a surface quarry that retains good integrity and spatial patterning. It exhibits several different lithic tool types as well as a high density of debitage. This site is recommended eligible to the NRHP under Criterion D because it is likely to contribute to the understanding of aboriginal lithic production and resource utilization in the context of procurement, lithic technology, and land use patterns. Site 42Dc3687 is a discrete lithic scatter that retains good integrity and spatial patterning. It exhibits a diversity of lithic tools and moderate amount of debitage. The site is recommended eligible to the NRHP under Criterion D

because it is likely to address such research domains as site function, lithic technology, and aboriginal lithic production systems. Site 42Dc3689 is a temporary camp that retains good integrity and spatial organization. It contains a moderate amount of artifacts with several tools and lies in loose sediments yielding potential for buried cultural remains. Therefore, this site is recommended eligible under Criterion D since it is likely to address such research domains as site function, lithic technology, cultural affiliation, and land use patterns. Site 42Dc3691 is a rock art panel displaying numerous petroglyph figures. This site is recommended eligible to the NRHP under Criterion C and D. The rock art panel embodies the distinctive characteristics of a type, period, and method of construction and may represent the work of a master, and possesses high artistic values (Criterion C). In addition, this site could be subject to further research including rock art style, thematic interpretations, chronology, and spatial analysis (Criterion D). One small surface quarry (42Dc3701) is recommended ineligible to the NRHP since it contains a minimal quantity and diversity of cultural materials. The site lacks temporal indicators, features, and potential for additional cultural remains, hence, it is unlikely to contribute to the prehistoric research domains of the area.

Both of the historic sites consisting of a corral (42Dc3688) and an inscription panel (42Dc3690) are considered not eligible to the NRHP. These sites are not associated with events that have made a significant contribution to the broad patterns of our history or with the lives of persons significant to our past (Criteria A and B). Additionally, the sites do not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C). Furthermore, the sites are unlikely to contribute additional information important to the history of the area (Criterion D).

## CONCLUSION AND RECOMMENDATIONS

The cultural resource inventory of Petroglyph Operating Company's block parcel in Township 5 South, Range 4 West, Section 36 resulted in the documentation of seven archaeological sites (42Dc3686, 42Dc3687, 42Dc3688, 42Dc3689, 42Dc3690, 42Dc3691, and 42Dc3701). Four prehistoric sites (42Dc3686, 42Dc3687, 42Dc3689, and 42Dc3691) are recommended eligible to the NRHP. In accordance with Ute Tribal protocol all these sites including an ineligible surface quarry (42Dc3701) require avoidance from future ground disturbing undertakings. Based on adherence to the avoidance recommendation, a determination of "no historic properties affected" is proposed for the project pursuant to 36 CFR 800.

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APPENDIX A  
INTERMOUNTAIN ANTIQUITIES COMPUTER SYSTEM  
(IMACS) SITE FORMS

On File At:

Utah Division of State History  
Salt Lake City, Utah

U.S. Department of the Interior  
Bureau of Indian Affairs



Uintah and Ouray Agency  
Fort Duchesne, Utah

Environmental Assessment No. U&O-FY14-087

**Petroglyph Operating Company, Inc**  
**Ute Tribal #s 31-08, 31-11, 31-14, 31-15, 32-07, 33-05, 36-01, 36-03, 36-04, 36-11, 36-14, and 36-15**

***Locations:***     **Sections 31, 32, and 33, Township 5 South, Range 3 West and Section 36, Township 5 South, Range 4 West**  
                              **Uintah Special Base and Meridian, Duchesne County, Utah**

***Applicant:***     Petroglyph Operating Company, Inc.  
                              P.O. Box 607  
                              Roosevelt, UT 84066

Prepared by

**SWCA Environmental Consultants**

September 2014

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## **Acronyms and abbreviations**

APD: Applications for Permit to Drill

APE: area of Potential Effects

BIA: Bureau of Indian Affairs

BLM: Bureau of Land Management

CEQ: Council on Environmental Quality

CFR: Code of Federal Regulations

CIAA: cumulative impacts analysis area

DR: decision record

EA: environmental assessment

EIS: environmental impact statement

FONSI: finding of no significant impact

GIS: geographic information system

MBTA: Migratory Bird Treaty Act

MOAC: Montgomery Archaeological Consultants, Inc.

NAAQS: National Ambient Air Quality Standards

NEPA: National Environmental Policy Act

NOx: nitrogen oxides

Petroglyph: Petroglyph Operating Company, Inc.

P&A: plugged and abandoned

Reservation: Uintah and Ouray Indian Reservation

ROW: right-of-way

SPCC: spill prevention, control, and countermeasure

SWCA: SWCA Environmental Consultants

Tribe/Tribe: Ute Indian Tribe

UBAQS: Uinta Basin Air Quality Study

UDC: Ute Distribution Corporation

UDNR: Utah Department of Natural Resources

UDOGM: Utah Division of Oil and Gas Mining

UDWR: Utah Division of Wildlife Resources

USC: U.S. Code

USDA: U.S. Department of Agriculture

USDI: U.S. Department of the Interior

UPIF: Utah Partners in Flight

USFWS: U.S. Fish and Wildlife Service

VOCs: volatile organic compounds

# 1 INTRODUCTION/PURPOSE AND NEED

## 1.1 Introduction

This environmental assessment (EA) has been prepared to analyze the potential impacts of Petroglyph Operating Company, Inc.'s (Petroglyph) proposal to construct eight well pads, and the drilling, completion, production and eventual reclamation of twelve well bores, identified in Table 1-1, for immediate implementation for production of oil and gas, which also includes the construction, operation, and maintenance of access roads/pipeline right-of-way (ROW) corridors.

The EA is a site-specific analysis of potential impacts that could result from the implementation of the Proposed Action or alternatives to the Proposed Action. Tribal lands within the project area are held in trust by the federal government under the administration of the Bureau of Indian Affairs (BIA). Therefore, the decision to allow a proposed oil and gas development project on Tribal surface and mineral estate constitutes a federal action, and the action is subject to analysis by the BIA under the National Environmental Policy Act (NEPA) of 1969, as amended. An EA provides information needed by the BIA decision maker in determining whether a finding of no significant impact (FONSI) will be prepared or whether an environmental impact statement (EIS) will be required. If the decision maker determines that this project has "significant" impacts following the analysis in the EA, an EIS would be prepared for the project ("significance" is defined by NEPA and is found in regulation 40 Code of Federal Regulations (CFR) § 1508.27).

The biological assessment (BA) portion of this EA has been prepared to review the proposed project in sufficient detail to determine to what extent the Proposed Action and Alternatives may affect any of the threatened, endangered, proposed, or sensitive (TES) species listed below. This BA is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (ESA) of 1973 (16 United States Code [USC] 1536(c)), and follows the NEPA, the Council on Environmental Quality's (CEQ) regulations for implementing NEPA (40 CFR 1500-1508), the United States Army Corps of Engineers (USACE) regulations for implementing NEPA (Environmental Report 200-2-2) and other applicable environmental regulations.

The species considered in this document are:

### Endangered Species

- Bonytail (*Gila elegans*)
- Colorado pikeminnow (*Ptychocheilus lucius*)
- Humpback chub (*Gila cypha*)
- Razorback sucker (*Xyrauchen texanus*)

### Monitored Species

- Bald Eagle (*Haliaeetus leucocephalus*)
- Golden Eagle (*Aquila chrysaetos*)

For information on the above-mentioned species, refer to Chapters 3 and 4 of this EA.

Federal agencies, in consultation with the United States Fish and Wildlife Service (USFWS), are required to ensure that any action they authorize, fund, or carry out will not jeopardize the continued existence of a federally-listed or proposed threatened or endangered species. As the Federal lead agency for this EA, the BIA is responsible for the Section 7 consultation process with the USFWS (refer to Section 5.0).

## 1.2 Background

Petroglyph proposes to construct 8 new well pads and drill, complete, produce and eventually reclaim 12 bores at multiple locations (see Table 1-1), and their associated infrastructure and ROWs in eastern Duchesne County, Utah for immediate implementation. The well bores will be located on the Ute Tribal lands within the Antelope Creek Field south of the town of Duchesne, Utah. If non-producing, the wells would be plugged and abandoned (P&A) per tribal, BIA, Bureau of Land Management (BLM) and State of Utah regulations. A map of the proposed wells can be found in Appendix A. Table 1-1 lists the proposed well names, legal locations, distance to the closest town, and a brief description of associated facility.

**Table 1-1. Well Site Descriptions**

Well Number	# of bores	Section, Township, and Range	Closest Town	Description of Facilities
31-08	1	Section 31, Township 5 South, Range 3 West	21.8 miles southwest of Myton, Utah	Access road, pipeline ROW and the well site area to include the cutting pit, pad and damage areas
31-11 31-14	2	Section 31, Township 5 South, Range 3 West	20.8 miles southwest of Myton, Utah	Access road, pipeline ROW and the well site area to include the cutting pit, pad and damage areas
31-15	1	Section 31, Township 5 South, Range 3 West	21.7 miles southwest of Myton, Utah	Access road, pipeline ROW and the well site area to include the cutting pit, pad and damage areas
32-07	1	Section 32, Township 5 South, Range 3 West	23.0 miles southwest of Myton, Utah	Access road, pipeline ROW and the well site area to include the cutting pit, pad and damage areas
33-05	1	Section 33, Township 5 South, Range 3 West	24.2 miles southwest of Myton, Utah	Pipeline ROW and the well site area to include the access road, cutting pit, pad and damage areas.
36-01	1	Section 36, Township 5 South, Range 4 West	20.7 miles southwest of Myton, Utah	Access road, pipeline ROW and the well site area to include the cutting pit, pad and damage areas
36-03 36-04	2	Section 36, Township 5 South, Range 4 West	20.9 miles southwest of Myton, Utah	Access road, pipeline ROW and the well site area to include the cutting pit, pad and damage areas
36-11 36-14 36-15	3	Section 36, Township 5 South, Range 4 West	21.3 miles southwest of Myton, Utah	Access road, pipeline ROW and the well site area to include the cutting pit, pad and damage areas

The Tribe and the Ute Distribution Corporation (UDC), as joint managers of the Ute Mineral Estate, entered into an agreement under the 1982 Indian Minerals Development Act (25 USC § 2102 et seq.) with Petroglyph for the purpose of furthering the development of oil and gas resources by expanding/infilling within the Antelope Creek Field on the Uintah and Ouray Indian Reservation (Reservation).

### **1.3 Purpose and Need for the Proposed Action**

The BIA's underlying purpose is to respond to Petroglyph's proposal for the Proposed Action, which is described in Section 1.1 and in Table 1-1. The BIA's need for the project is to further the agency's mission of assisting in the development of Native American trust lands for the benefit of the affected tribes. Included in this mandate is the responsibility to assist the tribes with development of oil and gas resources. The Tribe is authorized to enter into agreement(s) for the development of mineral resources by various treaties, Tribal Constitutions, By-laws, and Corporate Charters. Assisting the Tribe with developing its oil and gas resources is consistent with the mission of the BIA, as set out in the following authorities:

- The Mining and Mineral Policy Act of 1970 (30 USC § 21 et seq.)
- The Indian Tribal Energy Development and Self-Determination Act of 2005 (Title V of the Energy Policy Act of 2005, Section 501)
- Mineral Leasing Act of 1920 (30 USC § 181 et seq.)
- Indian Mineral Leasing Act of 1938 (25 USC § 396a-g)
- Indian Mineral Development Act of 1982 (25 USC § 2102 et seq.)
- Mineral Leasing Act for Allotted Lands of 1909 (25 USC § 396)

The underlying purpose of the Proposed Action is for Petroglyph to drill wells under a 1982 Indian Minerals Development Act agreement with the Tribe and the UDC. Revenues generated from the production of oil and gas resources under Petroglyph's agreement would contribute to fostering tribal economic independence and would therefore comply with BIA's objectives.

The BIA's purpose for this project is to ensure that American Indian lands held in trust by the United States are given the opportunity to have mineral resources developed in a manner that maximizes their best economic interests and minimizes any adverse environmental impacts resulting from such development. The BIA's mission is to fulfill its trust responsibilities and promote self-determination on behalf of tribal governments, American Indians, and Native Alaskans.

The requirements and decisions regarding exploration and development discussed in this EA would only apply to Tribal surface and/or Tribal mineral leases. The BIA is responsible for mineral lease issuance and administration. Following issuance of a decision record (DR) for this EA, the permitting authorities for a project involving Tribal surface or mineral ownership would be the Tribe, the BIA, and the BLM. In addition to being responsible for Tribal mineral lease issuance and administration, the BIA is also the surface permitting authority for a well involving Tribal surface or mineral ownership. As such, the BIA is the surface permitting and the decision-making authority for this EA. The BLM is the "downhole" or subsurface well permitting authority for Applications for Permit to Drill (APD) for wells proposed on Tribal lands in coordination with the BIA. The BIA provides the APD concurrence, in accordance with Federal Oil and Gas Onshore Order No.1. The Utah Division of Oil, Gas and Mining (UDOGM) also provide administrative review for every oil and gas well in the State of Utah, regardless of surface ownership.

## **1.4 Relationships to Statutes, Regulations, and Plans**

The Proposed Action and No Action Alternative are consistent with federal, state, Tribal, county, and local laws, regulations, and plans as discussed below.

The proposal would be in conformance with the Petroglyph's Antelope Creek Oil and Gas Field Expansion/Infill Thermal Recovery Project, completed in 1995 and modified in 2004 and 2006. The Antelope Creek EA decision allows for processing of ROW grants of easement on Tribal lands within the Antelope Creek area. It has been determined that the Proposed Action and No Action Alternative alternative(s) being analyzed in this site specific EA would not conflict with other decisions throughout the Antelope Creek area.

The Secretary of the Interior is authorized, on behalf of the federal government, to administer the leasing of oil and gas resources on Indian land through the 1909 Mineral Leasing Act for allotted lands, the Indian Mineral Leasing Act of 1938, and the Indian Mineral Development Act of 1982. The Tribe is integrally involved in the decision-making processes for leasing and permitting on the Reservation; the Tribe's Energy and Minerals Department is responsible for reviewing and approving all ROW applications on Tribal surface and all final approvals are granted only with Tribal concurrence.

The requirements and decisions regarding exploration and development in this EA would only apply to Tribal surface and/or Tribal mineral leases. The BIA is responsible for mineral lease issuance and administration. Following issuance of a DR for this EA, the permitting authorities for a project involving Tribal surface or mineral ownership would be the Tribe, BIA, and BLM. In addition to being responsible for Tribal mineral lease issuance and administration, the BIA is also the surface permitting authority for a well involving BIA-administered surface or mineral ownership. As such, the BIA is the surface permitting and the decision-making authority for this EA. The BLM is the "downhole" or subsurface well permitting authority for Applications for Permit to Drill (APD) for wells proposed on Tribal lands in coordination with the BIA. The BIA provides the APD concurrence, in accordance with Federal Oil and Gas Onshore Order No.1. The Utah Division of Oil, Gas and Mining (UDOGM) also provide administrative review for every oil and gas well in the State of Utah, regardless of surface ownership.

The Proposed Action and No Action Alternative are consistent with the evaluations set forth in the Antelope Creek EA.

### **1.4.1 State and Local Laws and Statutes**

There are no comprehensive State of Utah land use plans near the Proposed Action.

The proposed project is consistent with the *Duchesne County Public Land Use Plan* (published in spring 1997 and amended winter 1998 and winter 2005), which encompasses the location of the proposed projects. In general, the plan indicates support for development proposals such as the Proposed Action through its emphasis on multiple-use public land management practices, responsible use, and optimum utilization.

### **1.4.2 Other National Environmental Policy Act Documents**

Petroglyph began developing the Antelope Creek field in 1994 under the Antelope Creek Oil and Gas Field and Secondary Recovery Applications from Water Flooding EA prepared by the BIA in 1994, authorizing 193 new wells. Between 1994 and 2002, the BIA authorized Petroglyph to drill and develop 13 exploratory wells to assess the viability of field expansion. In January 2003, Petroglyph was authorized to drill an additional 478 conventional oil, gas, and injection wells, generally spaced at one

well per 40 acres. The BIA also authorized Petroglyph to conduct an expansion of the field in 2003. In 2003, an EA was prepared for the Antelope Creek Field Expansion and a FONSI was signed in January of 2003 (BIA 2003). The BIA concluded that the projected development plans would not adequately extract much needed petroleum resources from the development field. A Supplemental EA was developed and a FONSI signed in March 2004 authorizing up to 445 additional oil and injection wells and 8,008 thermal recovery wells. The Expansion development project is located in eastern Duchesne County, Utah within Township 4 south and Township 5 south, Range 3 west and Range 4 west. This EA tiers to the 2003, 2004, and 2006 documents, where appropriate.

## 1.5 Summary of Scoping and Identification of Issues

### 1.5.1 Scoping Summary

Due to the small scale of this proposed development, no external public scoping was conducted for these projects. Internal scoping meetings were conducted by the BIA, the Tribe, the BLM, and Petroglyph during on-site meetings in March and February, 2014, and a determination of potential impacts to individual resources was conducted at that time. Those resources and environmental elements identified as not present or not impacted to a degree requiring detailed analysis were required were not carried forward into the EA (Table 1-2).

**Table 1-2.** Elements Not Carried Forward Following Internal Scoping

Element	Reason Element Was Not Carried Forward
Air quality	Dust and other emissions currently occur from vehicles using project area roads. Those air quality impacts are encompassed within the Uinta Basin Air Quality Study (UBAQS) that was conducted in 2009. Overall, air quality in the Uinta Basin was modeled as being within attainment of the National Ambient Air Quality Standards (NAAQS). The 2012 horizon showed isolated modeled exceedances of the ozone NAAQS, which are thought to be residual effects from using Wasatch Front monitors (which are 120 miles away in a non-attainment area) to calibrate the model. Additional models were run for the Greater Natural Buttes EIS and the Gasco EIS. The results of those models correspond with the results of the UBAQS model. There are no regulatory monitoring data for the project area to verify and calibrate the results of either model, although monitoring is ongoing in the Uinta Basin beginning in July 2009. Preliminary monitoring results show exceedances of the ozone NAAQS in the Uinta Basin during the winter when snow cover is present. However, ozone formation from its component parts nitrogen oxides (NOx) and volatile organic compounds (VOCs) is a non-linear, photo-reactive process, and no models exist for predicting winter-time ozone formulation. It is anticipated that the incremental change from this project's alternatives would be so small as to be undetectable by both models and monitors.
Cultural resources	A Class I literature review was completed by Montgomery Archaeological Consultants, Inc. (MOAC) in 2014. The area that includes the proposed wells has been previously surveyed in 1996, 1997, 1998, and 2004 by multiple companies. No archaeological sites occur within 150 feet of any of the proposed wells, access roads, or pipelines. A determination of "no adverse effect" is recommended for the undertaking pursuant to Section 106 of the National Historic Preservation Act (36 CFR § 800). See Appendix D for a list of survey dates and associated reports.
Land resources: topography, geologic setting, and mineral resources	No unique or important land resources are found in the project area. No conflicts with other mineral resources (e.g., gilsonite) are expected based on implementation of the Proposed Action.



**Table 1-2.** Elements Not Carried Forward Following Internal Scoping

Element	Reason Element Was Not Carried Forward
Paleontological Resources	SWCA conducted a paleontological analysis of existing data and a paleontological field survey at the request of Petroglyph Operating Company and the Ute and Ouray Indian Tribes in June and July 2014 (SWCA 2014a). No scientifically important fossils were documented within the Area for Potential Effects (APE) during the field survey and there is no direct evidence that suggests an elevated likelihood of subsurface fossils within the APE. The APE is defined as the location of the proposed well pads, access roads, and pipelines. The paleontological survey area comprises a 100-foot buffer around the proposed well pads and a 100-foot buffer on either side of the centerline of associated access roads and pipelines (making up a 200-foot-wide corridor).
Public health and safety	The applicant's standard operating procedures would render any risk to public health and safety negligible.
Resource use patterns (hunting/fishing/gathering, timber harvesting, agriculture, mining, recreation, transportation networks, land-use plans)	Hunting/fishing/gathering, agricultural uses, mining, recreational uses, and transportation networks are either not present, or are compatible with the proposed action and would be affected so negligibly as to be immeasurable.  Currently, the Tribe does not have a reservation management plan.
Socioeconomic conditions	If the proposed wells are productive, the Tribe would earn revenues and royalties from each producing well. However, no substantial impacts to the social or economic status of Uintah County or nearby communities would occur from this proposed natural gas and oil exploration project due to its small size in relation to ongoing development throughout the Uinta Basin. The Tribe would earn long-term revenues from the ROW rental fees. Also, the Tribe has passed and/or amended ordinances that apply to all Reservation employers. These ordinances require enterprises doing business within the Reservation to employ, to the greatest extent possible, Tribal members and Tribally-owned subcontractors. These ordinances are Ordinance No. 92-07, "The Contracting Preference Ordinance" (signed in 1992) and Ordinance 10-001, "An Ordinance Amending Ute Ordinance No. 09-002, No. 92-07 and Resolution 92-011, establishing the Ute Tribal Employment Rights Office (UTERO) Ordinance and Repealing Resolution 02-088" (signed in 2010). Petroglyph, in compliance with these Tribal Resolutions, would afford increased employment opportunities for Tribal members, thus potentially improving individual economic conditions for Tribal members.  No impact to the social or economic status of the county or nearby communities would occur from this project due to its small size in relation to ongoing development throughout the basin. Hiring policies would encourage the use of local or regional workers.
Light, sound and noise	Light, sounds and noise from this proposal would be compatible with the surrounding land uses. Noise would be minimized by muffling and maintaining all internal combustion engines.
Special-status plant species	The proposed well pad, road, and pipelines do not occur within any polygons of threatened and endangered species as identified by the U.S. Fish and Wildlife Service (USFWS). The area was visited by SWCA Environmental Consultants (SWCA) in December 2011, March and June 2012; January, April and October 2013; and March and April 2014. It was determined that no potential habitat exists for any special-status plant species (Appendix B). Federally listed threatened, endangered, and Utah State/Bureau of Land Management (BLM)-sensitive plant species potentially occurring in the proposed project area are listed in Appendix B. Rationale for why certain plant species would not be impacted by the Proposed Action is provided Appendix B.
Water resources	No unique water resources are found in the project area; impacts to groundwater systems would be negligible because well bores would be cased and cemented to groundwater in accordance with standard oil/gas-field practices, impacts from water usage have already been considered in other documents, and due to Spill Prevention Control and Countermeasure measures discussed in section 2.2.9. Impacts from water usage have already been considered in other documents. All project actions would be conducted in compliance with the Clean Water Act (33 USC § 1251 et seq.).
Wetlands and floodplains	No wetlands or floodplains occur in the area that would be impacted by the project.

**Table 1-2.** Elements Not Carried Forward Following Internal Scoping

Element	Reason Element Was Not Carried Forward
Wilderness	No federally-designated, state-designated, or Tribally-designated wilderness areas occur in the project area.

## 1.5.2 Issues Identified for Analysis

Resources and/or environmental elements identified as potentially impacted by the project are listed below.

### 1.5.2.1 FISH AND WILDLIFE (INCLUDING SPECIAL-STATUS SPECIES)

The project area has the potential to serve as habitat for big game. Therefore, potential impacts to big game species are carried forward as an issue for analysis.

Surveys conducted by SWCA Environmental Consultants (SWCA) in December 2011; March and June, 2012; January, April and October, 2013; and March and April 2014 identified the area as habitat for various raptor and migratory bird species. Eighteen known nests occur within 0.5 mile of proposed disturbance (SWCA 2014b). The Bureau of Indian Affairs, Uintah and Ouray Agency (BIA), in accordance with the Migratory Bird Treaty Act of 1918 (16 USC 703-711), Executive Order (EO) 13186 (66 Federal Register 3853), and the Bald and Golden Eagle Protection Act, amended in 1973 (16 USC, § 669 et seq.), requires that if construction occurs during raptor nesting season (February 1- August 31), a qualified biologist will first conduct a site specific survey to determine activity. . If occupied/active raptor nests are found, construction would not occur during the critical nesting season for that species within the species-specific spatial buffer, unless the nest is obscured, as determined by USFWS, from visual or noise related impacts through vegetative or topographic screening. Ute Tribal Fish and Wildlife Department Biologists would determine spatial buffers based on site-specific vegetative and topographic features within the vicinity of occupied nests.

Special-status species have been designated by a government body as being in need of protection due to declines in populations. Examples of special status include federal designations as threatened or endangered, Utah's designations as special-status species, and the Utah Partners in Flight (UPIF) designation as species of concern. Federally threatened and endangered species, Utah special-status species, and UPIF species of concern potentially occurring in the proposed project area are listed in Appendix C. Rationale for why certain wildlife species would not be impacted by the Proposed Action is also provided in Appendix C.

The Proposed Action will result in the use of fresh water for well drilling, well completion activities, and for fugitive dust control. Such a project would affect a change in current water usage, resulting in a depletion of fresh water available for the federally-listed Upper Colorado River System fish species and their designated critical habitats. Surface and subsurface water quality could be affected by the Proposed Action from increased sedimentation from surface disturbance and/or possible contamination by hydrocarbon materials from pipeline ruptures, leaks and/or spills. Thus, water resources are carried forward for assessment in this EA. The Upper Colorado River System fish species are comprised of the bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), razorback sucker (*Xyrauchen texanus*).

### **1.5.2.2 SOILS**

Approximately 32.2 acres of surface disturbance, resulting in both indirect and direct impact to soils and impacts to soil-related resources (i.e., vegetation and water resources), is proposed for this project. Therefore, impacts to soils are carried forward as an issue for analysis.

### **1.5.2.3 VEGETATION**

Approximately 32.2 acres of surface disturbance is proposed for this project. The proposed project would affect vegetation resources in the project area from construction activities. Potential impacts include removal of existing vegetation and disturbance to underlying soils and proliferation of weed species. Due to increased surface disturbance from project implementation, impacts to vegetation are carried forward as an issue for analysis. The project area includes pinyon-juniper woodlands that could provide firewood, fence posts, etc. for Tribal members. The BIA timber management specialist attended on-sites in March and February, 2014 and determined that the quality of the wood was not sufficient for use.

### **1.5.2.4 WATER RESOURCES**

The Proposed Action will result in the use of fresh water for well drilling, well completion activities, and for fugitive dust control. Such a project would affect a change in current water usage, resulting in a depletion of fresh water available for the federally-listed Upper Colorado River system fish species and their designated critical habitats. Surface and subsurface water quality could be affected by the Proposed Action from increased sedimentation from surface disturbance and/or possible contamination by hydrocarbon materials from pipeline ruptures, leaks and/or spills. Thus, water resources are carried forward for assessment in this EA.

## **1.6 Summary**

This chapter has presented the purpose and need for the proposed project, as well as relevant issues—that is, those elements that could be affected by the implementation of the proposed project. The Proposed Action and the No Action Alternative are presented in Chapter 2. Chapter 3 presents the affected environment for this project. The potential environmental impacts or consequences resulting from the implementation of each alternative are then analyzed in Chapter 4 for each of the identified issues described in Chapter 3.

## 2 ALTERNATIVES

### 2.1 Introduction

This EA focuses on the Proposed Action and the No Action Alternative. The No Action Alternative, required by Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14), is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action. No additional alternatives were considered. Where applicable, all activities would occur in accordance with the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (U.S. Department of Interior (USDI) and U.S. Department of Agriculture (USDA) 2007).

### 2.2 Alternative A – Proposed Action

Petroglyph proposes to construct 8 new well pads, drill, complete, and produce 12 bores on multiple locations (see Table 2-1), and their associated infrastructure and ROWs. All would be located in Duchesne County, southwest of Myton, Utah. Approximately 6,890.4 linear feet of new road would be constructed to access the proposed wells. If the wells go into production, approximately 13,489.6 feet of gas lines would be laid upon the land surface. If dry, the wells would be plugged and abandoned per Ute Tribe, BIA, and State of Utah requirements.

**Table 2-1.** Disturbance Acreages for the Proposed Wells

Well	Well Pad Including Damage Area (acres)	Surface Gas Pipeline (feet)	Road (feet)	Road (acres) <sup>1</sup>	Total Acres of Surface Disturbance <sup>2</sup>
UTE TRIBAL 31-08	3.3	950.6	898.9	0.62	3.9
UTE TRIBAL 31-11, 31-14	3.0	2,486.6	169.9	0.12	3.2
UTE TRIBAL 31-15	3.3	2,342.5	182.6	0.13	3.5
UTE TRIBAL 32-07	3.4	539.5	501.1	0.34	3.7
UTE TRIBAL 33-05	2.8	368.2	7.6	0.01	2.8
UTE TRIBAL 36-01	3.7	1,690.4	1,229.4	0.85	4.5
UTE TRIBAL 36-03, 36-04	3.7	1,512.2	307.1	0.21	3.9
UTE TRIBAL 36-11, 36-14, 36-15	4.2	3,599.6	3,593.8	2.47	6.7
<b>Total Disturbance Acres</b>	<b>27.4</b>	<b>13,489.6</b>	<b>6,890.4</b>	<b>4.75</b>	<b>32.2</b>

<sup>1</sup> Acreage = 30-foot ROW.

Does not include surface gas pipelines because no surface disturbance would occur.

As indicated in Table 2-1, the total estimated surface disturbance associated with the Proposed Action would be 32.2 acres.

## **2.2.1 Access**

Existing and newly constructed roads would provide access to the proposed wells. Three new roads, varying in length from 7.6 to 3,593.8 long by 30 feet wide, would be required to access the proposed well pads. As highlighted in Table 2-1, the total surface disturbance associated with the construction of access roads would be approximately 4.75 acres. All new and existing access roads would be constructed, improved or maintained according to guidance and requirements set out in the BLM's Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (i.e. the "Gold Book"), local road standards, or as directed by the Tribe. Access roads would be constructed and/or improved to be crowned and ditched and have an 18-foot running surface. Low-water crossings, or culverts, would be installed at all drainage crossings, as directed.

## **2.2.2 Well Site Layout**

Petroglyph proposed to construct 8 new well pads and drill, complete and produce 12 well bores, as summarized in Table 1-1. The average well site disturbance for the wells, including cuts and fills, would be on an area measuring approximately 190 × 340 feet, and the reserves pit would result in an additional approximately 60 × 110 feet of disturbance. The well pad sites would collectively disturb approximately 27.4 acres of land, including spoil piles and damage areas. According to the EA for the Antelope Creek Oil and Gas Field Expansion Project (BIA 2003), the area of disturbance would be kept to a minimum necessary for drilling activities, and disturbance would be minimized by locating roads and pipelines within or adjacent to existing roads or utility corridors.

New well pads would be constructed from the native sand/soil/rock materials present on site. Prior to construction, vegetation would be cleared from the pad site, as necessary. Topsoil would be salvaged and stockpiled in areas adjacent to the constructed well-pad surface, but within the well pad disturbance area from where topsoil could be accessed, excavated, and applied to recontour surfaces, as part of interim reclamation measures. Sufficient topsoil to facilitate revegetation would be segregated from subsoils during all construction operations and returned to the surface upon completion of operations. Topsoil stockpiles would be seeded or otherwise protected to prevent erosion and to maintain soil microflora and microfauna. All disturbed sites would be revegetated as soon as practical following disturbance. Topsoil stockpiles maintained for more than one year would be scarified, seeded with an approved seed mix, and monitored and mitigated as needed to control minimize accelerated erosion. Topsoil piles would be delineated with lath or flagging to prevent the soil from being buried or used during pad construction. Additional erosion control measures would be implemented should accelerated erosion become evident.

The reserve pit would be fenced with barbed wire on three sides prior to drilling activity and closed off on the fourth side after removal of the drill rig. Fencing would be maintained until the pit is backfilled, and the fourth side would be fenced if fluids are placed in the reserve pit prior to the drilling rig being moved onto the location. The reserve pits for all proposed wells would be lined with an impermeable material.

## **2.2.3 Surface Facilities**

The proposed project would include the construction of a wellhead and pumping unit, one storage tank, spoil dirt stockpile(s), surface material stockpile(s), gas pipelines, and a reserve pit at each well site. All permanent (meaning on-site for six months or longer) structures would be painted beetle green to match the surrounding landscape color, unless another color is specified by the Tribe's Energy and Minerals Department and the BIA. This would include all facilities except those required to comply with Occupational Safety and Health Act regulations. All storage tanks will be surrounded on four sides by an earthen berm that provides a total containment. The floor and walls of the berm will be constructed of compacted earth with a layer of clay that ensures that the berm is able to contain the potential release of

spilled fluids from the storage tanks until the discharge can be detected and addressed by field operations personnel. A secondary backup will likewise be constructed of compacted earth with a layer of clay. Facility personnel will inspect the berms regularly for the presence of oil and will inform the appropriate authorities when spills of reportable amounts occur.

### **2.2.4 Pipelines**

Approximately 13,489.6 feet of gas lines would be laid on the surface adjacent to the access roads during a one-time pass using a pick-up truck, resulting in negligible disturbance to vegetation and soils. The proposed lines would consist of a 1 to 3-inch high-density polyethylene gather line running from the well pads to an existing gas transmission line. Pipeline construction and installation would adhere to procedures specified by the BIA as well as other applicable guidelines, including the American Society of Mechanical Engineers (ASME) standards B31.8 Gas Transmission Distribution Piping Systems, latest edition. No clearing or grading of the ROWs would be required. For some of the wells, the pipeline would need to be buried under existing roads. No new surface disturbance would occur. In general, the drainages that occur within the project area are intermittent and rarely have water. No pipelines would be located near water. Petroglyph, or their contractor, would ensure that the path of the pipeline is cleared of trees, boulders, brush, and other obstructions so the pipeline operator can safely operate, inspect, maintain, and repair its pipelines.

### **2.2.5 Well Development**

After completion of drilling, a well containing producing horizons would be logged and production casing run and cemented in accordance with the drilling program approved in the APD. This would isolate all formations in the hole and would effectively eliminate contamination between hydrocarbon zones and/or water aquifers and other mineral resources.

If any spills of oil, gas, salt water, or other noxious fluids occur, Petroglyph would immediately contact the Ute Tribe Energy and Minerals Department, BLM, and any other regulatory agencies necessary in accordance with operator's Spill Prevention Control and Countermeasure (SPCC) Plan, and as required by regulation. Oral notice would be given as soon as possible, but within no more than 24 hours. Oral notices would be confirmed in writing within 72 hours of any such occurrence. Cleanup efforts would be initiated immediately. This would be true at any stage of drilling, completion, operation, or abandonment of the well.

Once the well is drilled and production casing set, a workover unit would move on-site to begin completion operations. Completion operations would normally take 10-20 days. The casing would be perforated in potentially productive zones downhole, production tubing would be run, and the well would be tested for initial production rates. If necessary, the producing formation would be hydraulically fractured in the designated productive zones in the well. This would be accomplished by pumping a mixture of sand proppant and gelled water down the well bore under pressure, through the perforations in the casing, and into the formation. As the formation fractures, the resulting space would be filled with the sand proppant to keep the fractures open and facilitate the flow of gas and oil to the well bore. Oil produced during completion operations would be placed in production tanks or temporary storage tanks on location until transferred to production tanks at the centralized facilities for sale.

All production facilities designed to hold fluids (e.g., condensate tanks and/or produced water tanks) would be completely surrounded by a dike constructed of impervious compacted soil designed to hold 1.5 times the capacity of the largest tank. In accordance with 43 C.F.R. 3164, a Well Completion Report would be filed with the BLM no later than 30 days after completion of the well. A schematic facilities/site

security diagram would be filed with the BLM within 30 days of installation. Petroglyph would adhere to all site security regulations as specified in *Onshore Oil and Gas Order No.3*.

### **2.2.6 Invasive and Noxious Weeds**

Petroglyph would control invasive and noxious weeds along access roads, pipelines, well sites, or other applicable facilities. Any invasive weeds directly attributed to the activities of Petroglyph would be the responsibility of Petroglyph to control. A list of noxious weeds would be obtained from the BIA or the county extension office. On lands administered by the BIA, an approved Pesticide Use Proposal would be obtained before the application of herbicides or other pesticides for the control of noxious weeds (BIA 2003).

### **2.2.7 Water Supply and Disposal**

Petroglyph purchases water for drilling and completing the subject wells from the Duchesne Culinary District. Water rights associated with this source are 43-11555 and 43-8342. Both are considered historical water rights. Water would be hauled by a licensed trucking company to the well site. No water wells would be drilled on the lease site. It is anticipated that one acre foot of water per well would be needed for drilling and completion, for a total of 12 acre feet of water used.

On January 21–22, 1988, the Secretary of the Interior; the governors of Wyoming, Colorado, and Utah; and the administrator of the Western Area Power Administration were cosigners of a cooperative agreement to implement the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (USFWS 1987). An objective of the recovery program was to identify reasonable and prudent alternatives that would ensure the survival and recovery of the four endangered Colorado River fish species, while providing for new water development in the upper Colorado River drainage basin.

The water used for this project would be obtained from historical water rights, which would result in depletions to the Colorado River system. The U.S. Fish and Wildlife Service (USFWS) addresses new and historic depletions differently under the Endangered Species Act Section 7 agreement of March 11, 1993. Historic depletions (permitted prior to January 1988), regardless of size, do not pay a depletion fee to the recovery program. Also, consultation for historic depletions was conducted in association with that 1993 agreement. New depletions require consultation and are subject to a fee. However, the USFWS has waived the fee for new depletions that are less than 100 acre-feet per year.

The water used for this project is considered a historic depletion; therefore consultation was completed in association with the 1993 Section 7 agreement. Based on the above, new Section 7 consultation is not necessary for this project.

### **2.2.8 Waste Disposal**

Drill cuttings and drilling fluids would be contained in the double-lined reserve pit and drilling fluids would be recovered and reused at the next drilling location. Any hydrocarbons would be removed as soon as possible after drilling operations are completed. If any oil is in the pit and is not immediately removed, the pit would be flagged overhead or covered with netting to prevent waterfowl use. Within 180 days after the termination of drilling and completion activities, the liquid contents of the reserve pit, if any, would be removed and disposed of at an approved waste disposal facility. The reserve pit would be reclaimed by filling it with the spoil material removed during initial construction of the pit, spreading previously stored topsoil, and reseeded according to specifications of the Tribe and BIA or other surface owners.

Any oil, gas, saltwater, or other noxious fluid spills would be immediately removed and transported to an approved disposal site. The spills would be reported to the Tribe's Energy and Minerals Department, the BIA hazardous materials coordinator, and other appropriate authorities. Oral notice would be given as soon as possible, but within no more than 24 hours. Oral notices would be confirmed in writing within 72 hours of any such occurrence.

No hazardous substances or chemicals (as defined in 40 CFR § 355 or subject to reporting under Title III of the Superfund Amendments and Reauthorization Act) would be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completing of this well.

Garbage, trash, and other waste materials would be collected in a portable, self-contained, fully enclosed dumpster or trash cage during operations. Trash would not be burned on location. Upon completion of operations or as needed, the accumulated trash would be hauled off-site to an approved sanitary landfill. A chemical porta-toilet would be furnished with the drilling rig. Human waste would be removed from the location and disposed of at an approved sewage facility (BIA 2003).

### **2.2.9 Spill Prevention, Control and Countermeasure Procedures**

As required by federal regulation (Title 40 CFR Part 112), Petroglyph would maintain and make available emergency SPCC plans that outline the methodology to be used in the event of a spill. The SPCC plans would describe how to contain spills and how to facilitate rapid cleanup of any hydrocarbon spill prior to contamination of either surface or subsurface waters. SPCC plans would be prepared as amendments for the field-wide plan or for individual well pads and/or ancillary facilities as is appropriate. Reporting of any spills and remediation actions would be in conformance with procedures defined in BLM Notice to Lessees 3A.

As each new well is completed, Petroglyph would complete site-specific SPCC Plan diagrams and applicable information. Such site-specific data would be added as an amendment to the field wide SPCC Plan. If spills of condensate, produced water, or other wastes occur in reportable amounts, as defined in BLM Notice to Lessee-3A, Petroglyph, their contractors or sub-contractors would contact the BIA, the Tribe's Energy and Minerals Department, BLM and any other regulatory agencies as required by law within 24 hours. Cleanup efforts would be initiated as soon as practicable. Proper final remediation and reporting to the appropriate agencies would be completed by Petroglyph or subcontractors.

### **2.2.10 Reclamation**

All reclamation would be performed in accordance with the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (USDI and USDA 2007), unless otherwise directed by the Tribe or BIA.

#### **2.2.10.1 PRODUCING LOCATION (INTERIM RECLAMATION)**

Immediately upon well completion, the locations and surrounding area would be cleared of all unused tubing, equipment, debris, materials, and trash. Any hydrocarbons in the pit would be removed as soon as possible after drilling operations are completed in accordance with 43 CFR § 3162.7-1. Any liquid remaining the pit would be evaporated or removed within 180 days after the termination of drilling and completion activities and, if any are removed, would be disposed of at an approved facility. The reserve pit and the portion of the well not needed for production facilities or operations would be recontoured to the approximate natural contours. The reserve pit and pipeline disturbance would be reclaimed within 180 days from the date of well completion, or as soon as environmental conditions allow. The stockpiled spoil material removed during initial construction would be used to fill in the reserve pit, and the stored topsoil



would be spread over the surface area. The locations would then be seeded with appropriate perennial seed mix, according to specifications of the Tribe and BIA or other surface owners. Seeding would be accomplished by drilling on the contour whenever practical or by other approved methods such as dozer track-walking followed by broadcast seeding. If initial seeding is not successful, reseeding may be required until revegetation is successful.

Once the well is plugged and facilities are removed and abandoned, the topsoil would be stripped and stockpiled off of the locations, and the well site, pipelines, and access roads would be returned to natural contours. The topsoil would be respread, and the locations seeded with reseeded with appropriate perennial seed mix. Seeding would be accomplished by drilling on the contour whenever practical or by other approved methods such as dozer track-walking followed by broadcast seeding. If initial seeding is not successful, reseeding may be required until revegetation is successful.

#### **2.2.10.2 DRY HOLE/ABANDONED LOCATIONS (PROTECTION OF TOPSOIL)**

Any dry holes would be plugged immediately, and the well pad, associated roads, and other facilities would be reclaimed as soon as possible after plugging to avoid accelerated erosion caused by surface disturbance. Abandoned well sites, roads, and other disturbed areas would be restored as near as practical to their natural condition; in addition, a below-ground plug and abandonment marker would be installed. Stockpiled topsoil would be spread across the recontoured area then seeded with the appropriate seed mixture. Seeding would be accomplished by drilling on the contour whenever practical or by other approved methods such as dozer track-walking followed by broadcast seeding. If initial seeding is not successful, reseeding may be required until revegetation is successful.

#### **2.2.10.3 FINAL RECLAMATION**

At the end of its productive life, each well would be plugged, capped, and all surface equipment would be removed. All surface pipelines no longer in use would also be removed. Abandoned well pads, roads and other disturbed areas would be restored as nearly as practical to their natural condition. Once a well is plugged and facilities are removed and abandoned, the topsoil would be stripped and stockpiled off of the location, and the well sites, pipelines, and access roads would be returned to natural contours. The topsoil would be respread, and the location seeded with appropriate perennial seed mix. Seed would be applied by broadcasting over the topsoil and crimping the seed into the topsoil with a dozer or other tracked heavy equipment. Alternatively, the seed may be mechanically drilled into the soil or broadcast and worked into the soil with a harrow. If initial seeding is not successful, reseeding would be required.

A Sundry Notice would be submitted by the operator to the State, and BLM, with copies to the BIA and Tribe, which describes the engineering, technical, or environmental aspects of final well plugging and abandoning. It would describe final reclamation procedures and any mitigation measures associated with final reclamation performed by the operator. On Tribal minerals, the Tribe would have a first right of refusal to take over the well prior to P&A. Tribe-approved, BLM and UDOGM standards for plugging would be followed. A configuration diagram, a summary of plugging procedures, and a job summary with techniques used to plug the well bore (e.g., cementation) would be included in the Sundry Notice.

#### **2.2.10.4 RECLAMATION MONITORING**

Monitoring of the reclaimed project area would be completed annually during the growing season. Additional actions to ensure reclamation success would be taken as needed. During the first two growing seasons, visual observation would be used to determine the success of the reclamation activities. During the third growing season, a quantitative methodology would be used to obtain basal vegetative cover.

The goal is to have the reclaimed area reach 30% basal cover when compared to the reference site. If after three growing seasons the areas have not reached 30% basal cover or basal area, Petroglyph would undertake additional reclamation activities if necessary. Monitoring would continue until the reclaimed area reaches 75% basal cover of desirable vegetation when compared to the reference site in accordance with BLM's Reclamation Guidelines.

## **2.2.11      *Applicant-committed Environmental Protection Measures***

### **2.2.11.1 AIR QUALITY**

Petroglyph would initiate immediate abatement of fugitive dust by application of water, chemical dust suppressants, or other measures on federal lands and during times of high use (i.e., construction, drilling, and workover operations) when air quality, soil loss, or safety concerns are identified by the BIA or the Tribe.

### **2.2.11.2 CULTURAL RESOURCES**

Petroglyph has agreed to educate its contractors and employees about the relevant federal and tribal regulations intended to protect cultural resources. All personnel would refrain from collecting artifacts and from disturbing any cultural resources in the area. Petroglyph would assume responsibility for all persons associated with the project. All vehicular traffic, personnel movement, construction, and restoration activities would be confined to areas cleared by the site inventory and to existing roads. If any potential cultural resources are uncovered during construction, work would stop immediately in the area. At that time, the Tribe's Energy and Minerals Department and Cultural Rights Protection Officer would be notified, and a mitigation plan would be determined. The Phoenix area BIA office and the Utah State Historic Preservation Office would also be notified.

### **2.2.11.3 DISPOSAL OF SEWAGE, GARBAGE, AND OTHER WASTE MATERIAL**

As discussed in Section 2.2.8, portable self-contained chemical toilets would be provided for human waste disposal. Upon completion of operations, or as required, toilet holding tanks would be pumped and their contents disposed of at an approved sewage facility in accordance with applicable rules and regulations regarding sewage treatment and disposal.

All garbage and nonflammable waste materials would be collected in self-contained portable dumpsters or trash cages, and, upon completion of operations or as needed, the accumulated trash would be hauled off-site to an approved sanitary landfill. No trash would be placed in the reserve pit.

As soon as practical after removal of the drilling rig, all debris and other waste materials not contained in the trash cage would be cleaned up, removed from the well location, and disposed of in an approved landfill. No potentially harmful materials or substances would be left on location.

### **2.2.11.4 HAZARDOUS MATERIALS**

As discussed above in Section 2.2.9, if spills of condensate, produced water, or other wastes occur in reportable amounts, as defined in BLM Notice to Lessee-3A, Petroglyph, their contractors or sub-contractors would contact the BIA, the Tribe's Energy and Minerals Department, BLM and any other regulatory agencies as required by law or regulation within 24 hours. Cleanup efforts would be initiated as soon as practicable. Proper final remediation and reporting to the appropriate agencies would be completed by Petroglyph or subcontractors.

### **2.2.11.5 NOXIOUS AND INVASIVE WEEDS**

As discussed in Section 2.2.6, Petroglyph would control noxious weeds along road and pipeline ROWs, well pads, and other applicable facilities, as well as on areas where weeds originate on the ROW and invade adjacent areas. On lands administered by the BIA, an approved Pesticide Use Proposal would be obtained before the application of herbicides or other pesticides for the control of noxious weeds.

### **2.2.11.6 SOILS**

Sufficient topsoil to facilitate revegetation would be segregated from subsoils during all construction operations and returned to the surface upon completion of operations. Topsoil stockpiles would be seeded or otherwise protected to prevent erosion and to maintain soil microflora and microfauna.

Surface disturbance and/or occupancy would not occur on slopes in excess of 25%, nor would construction occur with frozen or saturated soil material or when watershed damage is likely, unless an adequate plan is submitted to the BIA that demonstrates potential impacts would be mitigated.

Temporary erosion control measures such as mulch, jute netting, or other appropriate methods would be used on unstable soils, steep slopes, and wetland areas to prevent erosion and sedimentation until vegetation becomes established.

### **2.2.11.7 PALEONTOLOGICAL RESOURCES**

Petroglyph would educate its contractors and employees about the relevant regulations intended to protect paleontological resources. All vehicular traffic, personnel movement, construction, and restoration activities would be confined to areas cleared by the site inventory and to existing roads. If any potential paleontological resources are uncovered during construction, work would stop immediately in the area. At that time, the Tribe's Energy and Minerals Department and Cultural Rights Protection Officer would be notified, and a mitigation plan would be determined.

### **2.2.11.8 VISUAL RESOURCES**

As discussed under section 2.2.3, all permanent (meaning on-site for six months or longer) structures would be painted beetle green to match the surrounding landscape color, unless another color is specified by the Tribe's Energy and Minerals Department and the BIA.

### **2.2.11.9 WATER RESOURCES**

All project actions would be conducted in compliance with the Clean Water Act. No surface disturbance would occur within 100 feet of intermittent and ephemeral drainages, where practical.

### **2.2.11.10 WILDLIFE**

To minimize wildlife mortality due to vehicle collisions, Petroglyph would advise project personnel regarding appropriate speed limits on designated access roads. Potential increases in poaching would be minimized through employee and contractor education regarding wildlife laws. Firearms are prohibited on the reservation. This policy minimizes the potential for illegal poaching. Petroglyph employees and contractors will be notified at the beginning of each project, reminding all personnel of the firearm restriction. If violations are discovered, the offending employee or contractor would be disciplined and may be dismissed by Petroglyph.

Reserve pits or other project-related impoundments potentially hazardous to wildlife would be adequately protected (e.g., fenced, netted) to prohibit wildlife access as directed by the BIA and to ensure protection of migratory birds and other wildlife.

Proposed disturbance within 0.5 to 1.0 mile of identified raptor nests would require survey by a qualified biologist to determine nest activity status prior to commencement of drilling and construction during the raptor nesting period. If an active raptor nest is identified within 0.5 to 1.0 miles (depending on species and line of sight) of a proposed site, Petroglyph would restrict construction during the critical nesting season for that species or obtain a raptor waiver.

## **2.3 Alternative B – No Action Alternative**

The CEQ regulations require the consideration of the alternative of no action (40 CFR 1502.14). Under the No Action Alternative, Petroglyph would not drill the above listed wells to include the additional support access and pipeline ROW infrastructure. Without federal approval, neither the BIA's purpose and need, nor the operator's purpose and need for the project, would be realized. The No Action Alternative effectively constitutes denial of the Proposed Action as set out in this document, and Petroglyph would not drill wells Ute Tribal 31-08, 31-11, 31-14, 31-15, 32-07, 33-05, 36-01, 36-03, 36-04, 36-11, 36-14, and 36-15. Other oil and gas development in the area would continue. Other current resource trends and land use practices would also continue at their current rates. In addition, future exploration and/or development activities in the area would be considered on a case-by-case basis and would be subject to a separate NEPA analysis.

## **2.4 Alternatives Considered but Eliminated from Further Analysis**

The Tribe's Energy and Minerals Department compliance officers have performed continual observation and monitoring of the proposed project locations upon receipt of notification of the Proposed Action. They have assisted in all surveying and planning for the Proposed Action. The compliance officers have actively participated in the field planning process by providing input and direction. As such, on-site visits were conducted by BIA and Ute Tribe personnel, and all alternative actions have been considered and deemed unusable. Therefore, no other action alternatives are analyzed in this EA.

## 3 AFFECTED ENVIRONMENT

### 3.1 Introduction

This chapter details the local environment that would be affected under the Proposed Action and the No Action Alternative. Only those resources raised as issues of concern by the BIA and the Ute Tribe during internal scoping and at the on-site inspection are considered below. Other resources were also considered but were dismissed from further analysis because the Proposed Action would have no measurable effect on the resource or the resources are not present in the project area (see Section 1.5, Summary of Scoping and Identification of Issues).

For the purpose of describing the affected environment, the project area is defined as the vicinity within approximately 0.5 mile of all areas proposed for development or disturbance under the Proposed Action. The project area includes 3384.3 acres. This area was selected to ensure that areas potentially affected by direct or indirect impacts are adequately described.

### 3.2 General Setting

The proposed wells would be located in the Antelope Creek Field area in Duchesne County and would be located primarily on Ute Tribe lands. Mineral extraction activities, transportation corridors, agricultural activities, and natural erosion have historically affected the area surrounding the proposed project area.

### 3.3 Resources and Issues Brought Forward for Analysis

#### 3.3.1 Soils

Soils on uplands within the project area include the Milok-Montwel-Badland association, the Pariette gravelly sandy loam, the Cadrina-Casmos-Rock outcrop complex, and the Walknolls extremely channery sand loam. The Walknolls-Uendal association occupies sideslopes and flat-topped benches. The Uffens sandy loam and the Mikim silt loam occupy terraces and alluvial flats. Soil loss due to erosion within the project area likely ranges from 0.13 to 3.39 tons per acre per year (BIA 2003).

#### 3.3.2 Vegetation

##### 3.3.2.1 GENERAL VEGETATION

The project area consists of reestablished grassland and winterfat (*Krascheninnikovia lanata*) plant communities, sagebrush communities, greasewood communities, and pinyon-juniper woodland. Reestablished grasslands consist of plants most likely seeded after disturbance and are dominated by crested wheatgrass (*Agropyron cristatum*), winterfat, and blue grama grass (*Bouteloua gracilis*). Dominant plants in the sagebrush communities include mountain sagebrush (*Artemisia tridentata*), black sagebrush (*Artemisia nova*), fringed sagebrush (*Artemisia frigida*), and needle and thread grass (*Hesperostipa comata*). Dense communities of greasewood (*Sarcobatus vermiculatus*) tend to be a near-monoculture, consisting of tall, dense stands of individuals. Pinyon-juniper woodlands consist of pinyon pine (*Pinus edulis*) and Utah Juniper (*Juniperus osteosperma*). Understory plants include mountain sagebrush, fringed sagebrush, and black sagebrush.

### **3.3.3 Wildlife**

#### **3.3.3.1 GENERAL WILDLIFE**

General wildlife species commonly found in the project area include coyote (*Canis latrans*), white-tailed prairie dog (*Cynomys leucurus*), desert cottontail rabbit (*Sylvilagus* spp.), black tailed and white tailed jackrabbit (*Lepus* spp.), red fox (*Vulpes vulpes*), American badger (*Taxidea taxus*), yellow-bellied marmot (*Marmota flaviventris*), and striped skunk (*Mephitis mephitis*). Bird species include black-billed magpie (*Pica hudsonia*), loggerhead shrike (*Lanius ludovicianus*), sage thrasher (*Oreoscoptes montanus*), lark sparrow (*Chondestes grammacus*), chukar partridge (*Alectoris chukar*), common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), horned lark (*Eremophila alpestris*), greater sage-grouse (*Centrocercus urophasianus*), and others. Other species include a variety of small mammals, rodents, bats, amphibians, and reptiles.

#### **3.3.3.2 BIG GAME**

On tribal lands, game species and their habitats are managed by the Ute Indian Tribe Fish and Game Department, the branch with jurisdiction and expertise over wildlife on the Reservation. The Tribe manages game species and their habitats to maintain populations at optimum numbers and composition for subsistence as well as cultural and recreational uses by Tribe members.

The Tribe has not mapped wildlife habitats on the Reservation, but rather defers to Utah Division of Wildlife Resources (UDWR) mapping of seasonal ranges to identify wildlife habitats there. According to UDWR geographic information system (GIS) data (UDWR 2011), pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and elk (*Cervus canadensis*) are the only big-game species whose range typically overlaps the area. Descriptions of each species and their habitats are provided below. The UDWR has identified various types of seasonal ranges (i.e., summer, winter, year-long) for these big-game species.

##### **3.3.3.2.1 Mule Deer**

Mule deer occupy most ecosystems in Utah but prefer shrublands characterized by rough, broken terrain and abundant browse and cover. Mule deer eat a wide variety of plants, including browse, forbs, and grasses. They graze on herbaceous plants during the spring and summer and browse for the leaves and stems of shrub species during the fall and winter (UDWR 2010). Mule deer rely on areas that provide a mosaic of habitats offering food, cover, and water. They are a hunted species that provide an important recreational activity and bring considerable economic activity to local communities.

Mule deer inhabit the project area and vicinity, especially the riparian areas and benches associated with Antelope Canyon. The entire project area is considered substantial winter habitat for mule deer.

##### **3.3.3.2.2 Pronghorn**

Pronghorn typically inhabit grasslands and semidesert shrublands of the western and southwestern United States. This species is most abundant in short- and mixed-grass habitats between 4,000 and 6,000 feet in elevation. Pronghorn are typically less abundant in xeric (very dry) habitats, preferring areas that average 12 to 15 inches of precipitation per year. Home ranges for pronghorn can vary between 400 and 5,600 acres based on various factors including season, habitat quality, population characteristics, and local livestock presence. Typically, daily movements do not exceed 6 miles. The entire project area is considered substantial year-long habitat.

### **3.3.3.2.3 Elk**

The entire project area is considered important elk year-long habitat. In the winter months, elk are known to use the area from Antelope Canyon west through the Brundage Canyon area (BIA 2003). The Utah Department of Natural Resources (UDNR) management plan objective is to sustain a winter population of 1,700 elk in Wildlife Management Unit 11, an area encompassing Uintah, Duchesne, Carbon, and Emery counties.

### **3.3.3.3 MIGRATORY BIRDS AND RAPTORS**

The Migratory Bird Treaty Act (MBTA) of 1918 was implemented for the protection of migratory birds. Unless permitted by regulations, the MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition, NEPA Executive Order 13186 mandates that federal agencies enforce the provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that federal actions evaluate the effects of actions and agency plans on migratory birds.

Those migratory birds listed as sensitive species or otherwise of special interest that may occupy the proposed project area are addressed below. This list includes those species classified as high-priority birds by UPIF (Parrish et al. 2002)-high-priority species are denoted by an asterisk (\*).

Migratory bird species commonly associated with pinyon-juniper woodlands include the Black-chinned Hummingbird\* (*Archilochus alexandri*), Gray Flycatcher\* (*Empidonax wrightii*), Gray Vireo\* (*Vireo vicinior*), Lewis' Woodpecker (*Melanerpes lewis*), Clark's Nutcracker (*Nucifraga columbiana*), Pinyon Jay (*Gymnorhinus cyanocephalus*), Western Scrub Jay (*Aphelocoma californica*), Black-throated Gray Warbler (*Setophaga nigrescens*), Bushtit (*Psaltiriparus minimus*), Juniper Titmouse\* (*Baeolophus ridgwayi*), Northern Shrike (*Lanius excubitor*), Virginia's warbler\* (*Vermivora virginiae*), and Say's phoebe (*Sayornis saya*).

The project area has been identified as suitable habitat for raptors. A total of 19 nests occur within 0.5 mile of proposed disturbance.

### **3.3.3.4 SPECIAL STATUS SPECIES**

#### **3.3.3.4.1 Special Status Fish Species**

The project area is located in the Green River basin of the upper Colorado River basin. Although no aquatic habitat exists in the project area, the basin is home to four federally listed fish species: Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), Bonytail chub (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*). These fish are federally and state listed as endangered and have experienced severe population declines due to flow alterations, habitat loss or alteration, and introduction of non-native fish species.

Three additional species are endemic to the Colorado River Basin, including the Green River: the roundtail chub (*Gila robusta*), flannelmouth sucker (*Catostomus latipinis*), and bluehead sucker (*Catostomus discobolus*). The roundtail chub is a state-listed threatened species, and the two suckers are species of special concern due to declining population numbers and distribution.

## **4 ENVIRONMENTAL CONSEQUENCES**

### **4.1 Introduction**

This chapter discusses the potential direct and indirect impacts from the Proposed Action and the No Action Alternative. Direct impacts to soils and vegetation in the following analyses are described as short-term and long-term impacts. In areas where interim reclamation would be implemented, ground cover by herbaceous and woody species could be re-established within 7 to 8 years following seeding of native plant species and diligent weed control efforts. These reclaimed areas are categorized as short-term disturbance. For the purposes of this analysis, it is assumed that 80% of the well pads and all roads would be long-term disturbance, and the remaining 20% of the pad would be short-term disturbance.

### **4.2 Direct and Indirect Impacts**

#### **4.2.1 Alternative A – Proposed Action**

##### **4.2.1.1 SOILS**

The Proposed Action would disturb approximately 32.2 acres of soils from the construction of the well pads and roads. Of this total, approximately 6.4 acres would be subject to short-term disturbance. The direct long-term impact to soils would be approximately 25.8 acres. Long-term impacts to soils are expected for the life of each well (an average of 20 years, and until reclamation is successful).

According to Toy and Foster (1998), soil loss in the project area from natural erosion is estimated to vary between 0.13 to 3.39 tons per acre per year. It is assumed that the amount of soil loss will triple on disturbed areas during the first year after project implementation. The amount of soil loss will be reduced slightly after the first year, but will remain at double the natural rate until the area is restored to its pre-disturbance status. As a result, erosion rates in the project area would increase from 0.13 to 3.39 tons per acre per year to 0.39 to 10.17 tons per acre the first year after disturbance and 0.26 to 6.78 tons per acre per year thereafter until the site is completely revegetated (BIA 2003). No perennial water bodies occur within the project area therefore sedimentation is not expected to directly impact water bodies.

Direct impacts to soils include mixing of soil horizons, soil compaction, short-term loss of topsoil and site productivity, and loss of soil/topsoil through wind and water erosion. Loss of soil/topsoil in disturbed areas would reduce the revegetation success of seeded native species due to increased competition from annual weed species. Annual weed species are adapted to disturbed conditions and have fewer stringent moisture and soil nutrient requirements than perennial native species do.

Impacts to soils would be partially mitigated by reclamation of disturbed areas with native vegetation and control of noxious and invasive weeds by mechanical and chemical treatment (see Section 2.2.10, Reclamation). Under the Proposed Action, interim reclamation would occur on approximately 20% of the well pads upon completion of drilling. The remaining 80% of the well pads would be revegetated after abandonment of the well (approximately 20 years).

##### **4.2.1.2 VEGETATION**

The Proposed Action would directly impact 32.2 acres of vegetation due to the removal of vegetation for construction of the well pads and roads. Of this, approximately 6.4 acres would be subject to short-term disturbance. The direct long-term impact to soils would be on approximately 25.8 acres. Long-term



impacts to vegetation are expected for the life of the well (an average of 20 years, and until reclamation is successful).

Indirect effects to vegetation would occur as a result of activities other than direct disturbance or removal of vegetation. Sources of indirect effects would include the introduction or spread of noxious weeds, or other changes in vegetation community composition following rehabilitation; increased public access and associated vegetation trampling/harvesting; fugitive dust; and increased risk of human-caused fires. The severity of these invasions would depend on the length of time until revegetation was implemented, the degree and success of reclamation and revegetation, and the degree and success of noxious weed control efforts.

Impacts to vegetation would be partially mitigated by reclamation of disturbed areas with native vegetation and control of noxious and invasive weeds by mechanical and chemical treatment (see Section 2.2.10, Reclamation). Under the Proposed Action, interim reclamation would occur on approximately 20% of the well pads upon completion of drilling. The remaining 80% of the well pads would be revegetated after abandonment of the well (approximately 20 years).

### **4.2.1.3 WILDLIFE**

#### **4.2.1.3.1 General Wildlife**

Up to 32.2 acres of wildlife habitat would be directly impacted from the removal of vegetation for construction of the well pads and roads. Of this, approximately 6.4 acres would be subject to short-term disturbance. The direct long-term impact to wildlife habitat would be on approximately 25.8 acres. Long-term impacts to wildlife habitat are expected for the life of the well (an average of 20 years, and until reclamation is successful).

Impacts to wildlife species described in Chapter 3 (General Wildlife) include the loss of or disturbance to native habitat, the fragmentation of connected habitats, a decrease in available forage and cover, and increased vehicle-caused mortality associated with the short-term increased vehicle activity in the project area. The loss of vegetative cover would likely lead to increased predation on small mammals and rodents by raptor species.

Surface disturbance would result in the loss of ground cover, which, in turn, could lead to an increase in predation on rodents, rabbits, and lizards in the project area. The removal of forage species and the potential for the invasion of unpalatable plant species upon completion of the Proposed Action could lead to a decrease in available food supply for big game animals, rabbits, and rodents in the project area. However, the relatively small acreage of project impact means there is unlikely to be a substantial impact on wildlife species population viability as individuals would be able to use move into adjacent habitat as needed to avoid disturbance.

#### ***Big Game***

Up to 32.2 acres of big-game habitat would be directly impacted from the removal of vegetation for construction of the well pads and roads. Of this total, approximately 6.4 acres would be subject to short-term disturbance. The direct long-term impact to big-game habitat would be on approximately 25.8 acres. Long-term impacts to habitat are expected for the life of the well (an average of 20 years, and until reclamation is successful).

Additionally, indirect impacts could occur to big-game habitat quality due to the potential spread of unpalatable noxious weeds outside of the surface disturbed area. Reclamation measures listed in Section 2.2.10 would help reduce the indirect impacts to big game.

The impact of greatest concern is displacement of the population. Displacement or avoidance would result from increased human activity and noise from equipment operation. The results of displacement would be reduced use of habitats near disturbances and potential overcrowding of the habitat the big-game would potentially move into. Overcrowding may cause an increase in competition for space and forage, an increase in stress levels for individuals, and a decrease in the health of animals. As a result, there could be a decrease in success of reproduction and an increase of winter mortality.

Habitat fragmentation would result in a reduction of habitat used by big game near disturbed areas, increased animal densities in adjoining habitat, increased stress from intra- and inter-species competition, and increased human-induced harassment, particularly along existing and proposed new access roads.

Displacement of any big game in the project area would occur during construction. However, the relatively small acreage of project impact means there is unlikely to be a substantial impact on game species population viability because individuals could move into adjacent habitat as needed to avoid disturbance.

### ***Migratory Birds and Raptors***

The Proposed Action would result in a loss of habitat for migratory birds and raptors. Direct and indirect impacts to migratory birds and raptors would include the long-term removal of up to 25.8 acres of habitat from the removal of vegetation for the construction of the well pads and roads, and the short-term removal of 6.4 acres of habitat, and potential disturbance of one or more of the 19 nests found within 0.5 mile of proposed wells if drilling were to occur during the nesting season. Temporary displacement of other birds due to increased activity in the project area would also occur during project construction activities.

Direct impacts to nesting and breeding migratory birds may occur, depending upon the time of construction. If development were to occur in the spring—during the nesting season for most migratory birds—impacts would be greater than if development were to occur between late summer and late winter. Impacts to birds during the spring could include nest abandonment, reproductive failure, displacement, and destruction of nests. Construction would likely have a greater impact on UPIF high-priority migratory bird species that may use the area because these species have smaller populations and limited distribution.

Successful reclamation efforts would return disturbed habitats to pre-disturbance levels, and loss of vegetation would be a temporary impact to migratory bird habitat. The Proposed Action would not likely result in a range-wide loss of any species' viability, nor would it cause a trend to federal listing due to the relatively small acreage impacted by the Proposed Action and the implementation of reclamation measures listed in Section 2.2.10. Thus, impacts to migratory bird species and raptors occurring from disturbance associated with the construction of the wells and associated components would be minimal.

### **4.2.1.3.2 Special Status Species**

#### ***Special Status Fish Species***

Colorado pikeminnow, humpback chub, bonytail, and razorback sucker are not found within the project area. The potential for sedimentation from the Proposed Action having an adverse impact is minimal considering the relatively low amount of sedimentation the Proposed Action would cause and the distance to the project area from perennial streams supporting these fishes. However, the proposed project would require the withdrawal of water. Any river depletion or change in Colorado River system tributaries such as the Green River would add to the cumulative impacts of all existing depletions. The USFWS has identified water, physical habitat, and the biological environment as the primary constituent elements of critical habitat for these species. Therefore, water withdrawals associated with this project would affect

critical habitat designated for the four fish species listed above. Project implementation would be required to comply with all recovery plan requirements for these species as described in the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (USFWS 2006). Historic water sources would be used for this project, therefore new Endangered Species Act Section 7 consultation is not necessary for this project. This project would have a “may affect, likely to adversely affect” determination for these fish. This impact would not be significant due to compliance with all recovery plan requirements for these species.

## **4.2.2 Alternative B – No Action Alternative**

### **4.2.2.1 SOILS, VEGETATION, WILDLIFE**

Under the No Action Alternative, there would be no direct disturbance or indirect effects to soils, vegetation, or wildlife species because there would be no surface-disturbing activities for construction of new wells or activities associated with the proposed project. Current land-use trends in the area would continue, including mineral extraction activities, transportation corridors, agricultural activities, and natural erosion.

## **4.3 Cumulative Impacts**

Cumulative impacts are those impacts that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable actions, regardless of which agency or person undertakes such other actions. The cumulative impacts analysis area (CIAA) is defined as a 1-mile buffer around each well and associated disturbance. According to the Utah Division of Oil and Gas Mining (UDOGM), the current past, present, and foreseeable activity for the CIAA is 162 oil and gas wells. Assuming 2.5 acres of disturbance for each well pad and pit, 1.0 acre of disturbance for pipelines per well, and 1.0 acre of disturbance for new access roads, the past, present, and future total area of disturbance due to oil and gas activity for the CIAA is approximately 729 acres (UDOGM 2011).

### **4.3.1 Soils**

Soil erosion would be increased due to the disturbance associated with oil and gas activities in the area. Each acre of disturbance adds to a cumulative effect by increasing erosion and destroying native vegetation, and through the invasion of undesired plant species. In general, soils in the Uinta Basin are very thin, slow to develop, and difficult to reclaim because of the arid climate and lack of organic material.

Surface disturbance in the CIAA due to past, present, and future oil and gas exploration activity would be approximately 729 acres. The Proposed Action would add approximately 32.2 acres of surface disturbance. The No Action Alternative would not result in an accumulation of impacts.

### **4.3.2 Vegetation**

The predominant cumulative impacts to vegetation resources would be the removal of vegetation resulting from implementation of the proposed project combined with unrelated past, present, and reasonably foreseeable future activities.

Oil and gas development would continue to degrade local habitat by direct disturbance and slow reclamation of disturbed areas. Surface disturbance within the CIAA would be approximately 729 acres.

The Proposed Action would add approximately 32.2 acres of surface disturbance. The No Action Alternative would not result in an accumulation of impacts.

### ***4.3.3 Wildlife, Big Game, Migratory Birds, and Raptors***

The predominant cumulative impacts to wildlife resources would be the incremental habitat fragmentation, animal displacement, habitat loss, and increasing human presence that would occur from implementation of the proposed project together with unrelated past, present, and reasonably foreseeable future activities.

Introduction of non-native invasive plant species can have significant adverse impacts on native wildlife dependent upon endemic species for their survival. In general, such an ecological shift would probably have detrimental impacts on native wildlife species, and would favor non-native and readily adaptive species.

Ongoing and planned activities in the CIAA would further reduce the amount of available cover, foraging opportunities, and breeding areas for a wide variety of trophic levels, including big game, raptors, other birds, predators, prey, and other nongame species. Oil and gas development, would incrementally reduce the productivity of the habitats affected and increase the amount of human presence and use of the region for, at a minimum, the lives of the projects. Additional development could preclude animals from using areas of more intensive human activity. In general, the severity of the cumulative effects would depend on factors such as the sensitivity of the species affected, seasonal intensity of use, type of project activity, and physical parameters such as topography, forage, and cover availability.

As part of the approval process, the BIA and Tribe conduct site visits and require surveys to identify potential raptor nesting sites prior to disturbance. The intent is to identify any occupied raptor territories or nest sites that are located within 0.25 to 1.0 mile of the proposed project area, depending on species and type of disturbance, and subsequently to develop additional protection measures for those sites (e.g., avoidance, constraint period). Therefore, based on these protection measures and agency-directed mitigation, the residual cumulative effect (e.g., increased human presence, habitat fragmentation) on area raptors from past, present, and reasonably foreseeable development would be expected to be moderate. The potential impacts to available habitat for area raptors identified in this cumulative analysis would be variable, and would be somewhat species-dependent, based on the size of the home range, prey preference, tolerance of human presence, nesting habitat, and foraging radius from the nest site. Direct and indirect effects to raptors would include possible human disturbance of breeding birds, a reduction in the prey base from construction of the projects, displacement of birds due to a decline in small mammal populations, and overall habitat fragmentation.

Oil and gas development would continue to degrade local habitat by direct disturbance and slow reclamation of disturbed areas. Surface disturbance within the CIAA would be approximately 729 acres. The Proposed Action would add approximately 32.2 acres of surface disturbance. The No Action Alternative would not result in an accumulation of impacts.

### ***4.3.4 Special Status Fish Species***

Cumulative effects include the effects of the future state, tribal, local, or private actions that are reasonably certain to occur in the project area. Future actions that are unrelated to the Proposed Action are not considered in this section because they would require separate consultation pursuant to Section 7 of the Endangered Species Act.

Declines in the abundance or range of many special status species have been attributed to various human activities on federal, state, tribal and private lands: human population expansion and associated infrastructure development; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation, including off-road vehicle activity; expansion of agricultural or grazing activities, including alteration or clearing of native habitats for domestic animals or crops; and introductions of non-native plant, wildlife, or fish, or other aquatic species, which can alter native habitats and outcompete or prey upon native species. Many of these activities are expected to continue on state and private lands within the range of the various federally protected wildlife, fish, and plant species and could contribute to cumulative effects to the species in the project area. Species with small population sizes, endemic locations, or slow reproductive rates, or species that primarily occur on non-federal lands where landholders may not participate in recovery efforts, would be highly susceptible to cumulative effects.

Reasonably foreseeable future activities that may affect river-related resources in the area include oil and gas exploration and development, irrigation, urban development, recreational activities, and activities associated with the Upper Colorado River Endangered Fish Recovery Program. Implementation of any or all of these projects has affected and continues to affect the environment, including but not limited to water quality, water rights, socioeconomic, and wildlife resources.

Cumulative effects to these species would include the following types of impacts:

- Changes in land-use patterns that would further fragment, modify, or destroy potential spawning sites or designated critical habitat
- Shoreline recreational activities and encroachment of human development that would remove upland or riparian/wetland vegetation, and potentially degrade water quality
- Competition with and predation by exotic fish species introduced by anglers or other sources

The Proposed Action would result in depletion of the river system. The No Action Alternative would not result in an accumulation of impacts.

## **5 CONSULTATION AND COORDINATION**

### **5.1 Persons, Groups, and Agencies Consulted**

<b>Name</b>	<b>Purpose and Authorities for Consultation or Coordination</b>	<b>Findings and Conclusions</b>
U.S. Fish and Wildlife Service	Information on consultation under Section 7 of the Endangered Species Act (16 USC 1531)	Information on fish and wildlife and threatened and endangered species
Utah State Historic Preservation Office	Consultation for undertakings as required by the National Historic Preservation Act (16 USC § 470)	Information is included in the cultural resources report (MOAC 2013 and 2014a-b)

## 5.2 List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
<b>SWCA</b>		
Amanda Childs	Project Manager	Document preparation, environmental analysis, quality assurance/quality control (QA/QC)
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Nathan Jahns	Environmental Scientist	Document preparation, environmental analysis
<b>BIA</b>		
Brad Wazaney	Environmental Protection Specialist	BIA Project Lead, document preparation

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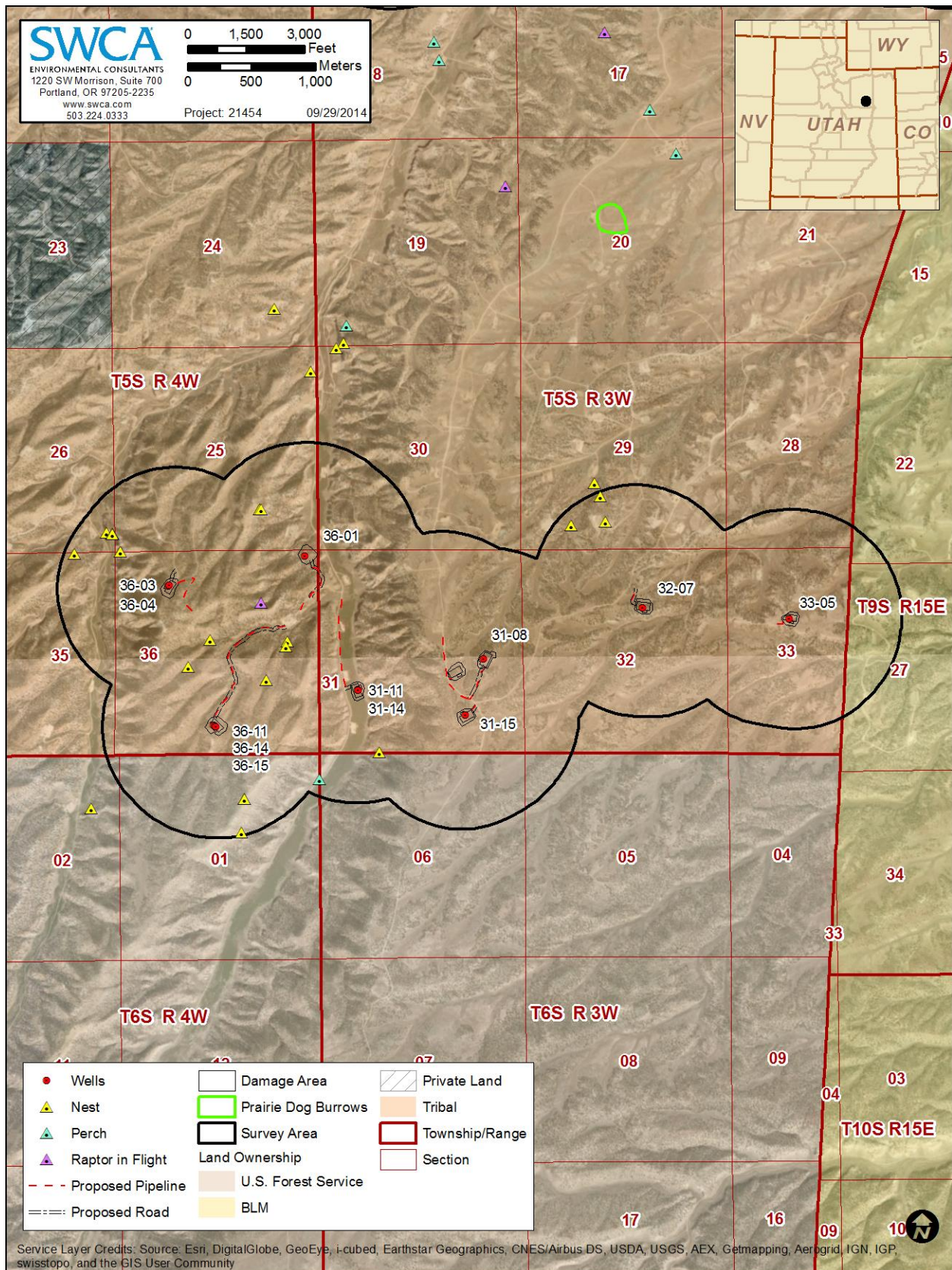
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## **Appendix A**

### **Maps**

Petroglyph Operating Company's Proposed Oil Wells Ute Tribal 31-08, 31-11, 31-14, 31-15, 32-07, 33-05, 36-01, 36-03, 36-04, 36-11, 36-14, and 36-15



## **Appendix B**

### **Special-status Plant Species**

**Table B.1.** Special-status Plant Species

Species Name/ Common Name	Status*	Location/Habitat <sup>†</sup> (county—location; geologic stratum; plant community; elevational range)	Potential for Occurrence in the Survey Area <sup>‡</sup>
<i>Aquilegia scopulorum</i> var. <i>goodrichii</i> Goodrich's columbine	S	Duchesne—West Tavaputs Plateau; Green River Formation oil shale and marlstone; elevational range unknown.	None. Survey area out of range for this species.
<i>Arabisvivariensis</i> Park rock cress	S	Uintah—Diamond Mountain, Diamond Gulch; Weber Formation sandstone and limestone; MDS or PJ; 5,000–6,000 amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Astragalusequisolensis</i> Horseshoe milkvetch	0	Uintah—Green River Horseshoe Bend; Duchesne River Formation sand and silty sand; MDS; 4,790–5,185 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Astragalushamiltonii</i> Hamilton milkvetch	S	Uintah—Asphalt Ridge; Mowry, Dakota and Wasatch formations, Lapoint and Dry Gulch members, Duchesne Formation; MDS or PJ; 5,240–5,800 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Cleomellapalmeriana</i> var. <i>goodrichii</i> Goodrich's cleomella	S	Uintah—Diamond Mountain; Morrison, Mancos, Tropic formations, heavy clay and shale slopes; SDS; 4,000–6,000 feet amsl.	None. Survey area out of range for this species.
<i>Cryptanthabarneyi</i> Oilshalecatseye	S	Uintah—south and southeast of Bonanza; Evacuation Creek, lower Parachute members, shale slopes, semi-barren; MDS or PJ; 4,600–6,000 feet amsl.	None. Survey area out of range for this species.
<i>Cryptanthagrahamii</i> Graham's catseye	S	Uintah—Green River Formation; shale slopes, semi-barren; MDS or PJ; elevation range unknown.	None. Survey area out of range for this species.
<i>Erigeron untermannii</i> Untermann fleabane	S	Duchesne, Uintah—West Tavaputs Plateau Green River; Uinta Formation, ridges, dry calcareous shales and sandstones; PJ or MB; 7,000–7,800 feet amsl.	None. Survey area out of range for this species.
<i>Fraseraackermaniae</i> Ackerman's frasera	S	Uintah—Chinle Formation; recently described species; elevation range unknown.	None. Survey area out of range for this species.
<i>Hymenoxyslapidicola</i> Rock bitterweed	S	Uintah—Blue Mountain, Cliff Ridge; Weber Formation, sandy ledges and crevices; PJ or ponderosa-manzanita; 5,700–8,100 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Lepidiumbarneyanum</i> Barney'spepperplant	E	Tribal, Duchesne—West Tavaputs Plateau, Indian Canyon; Uinta Formation, white shale outcrops and ridges; barren inclusions in PJ; 6,200–6,500 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Lepidiumhuberi</i> Huber pepperplant	S	Uintah—foothills, Ashley Creek, Dry Fork; Chinle, Park City, Weber Formation, eroding cliffs, alluvium, sandy or shaley bluffs; black sage or MB; 5,000–6,400 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Mentzeliagoodrichii</i> Goodrich blazingstar	S	Duchesne—Willow and Argyle canyons; Green River Formation, steep cliffs, white calcareous shale; open MB; 8,100–8,800 feet amsl.	None. Formation and associated soils do not exist in survey area.
<i>Penstemonacaulis</i> var. <i>acaulis</i> Stemless beardtongue	S	Daggett—Browns Park Formation; ashy, gravelly or sandy ridges and knolls; sagebrush-desert grass or PJ; 5,840–7,285 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Penstemongibbensii</i> Gibbens beardtongue	S	Daggett—Browns Park Formation; Green River Formation, sandy/shaley bluffs, slopes; juniper, thistle, buckwheat, serviceberry; 5,500–6,400 feet amsl.	None. Formation and associated soils do not exist in the survey area.

**Table B.1.** Special-status Plant Species

Species Name/ Common Name	Status*	Location/Habitat <sup>†</sup> (county—location; geologic stratum; plant community; elevational range)	Potential for Occurrence in the Survey Area <sup>‡</sup>
<i>Penstemon goodrichii</i> Goodrich beardtongue	S	Duchesne, Uintah—Lapoint, Tridell, Whiterocks; Duchesne River Formation; clay badlands; MDS, shadscale saltbush, PJ, or MB; 5,590–6,215 feet amsl.	None. Survey area out of range for this species.
<i>Penstemon grahamii</i> Graham beardtongue	C	Uintah, Duchesne—oil shale outcrops throughout BLM Vernal Field Office; Evacuation Creek, lower Parachute members, oil shale or white shale knolls and talus; semi-barren MDS or PJ; 4,600–6,700 feet amsl.	None. Formation and associated soils do not exist in survey area.
<i>Penstemon scariosus</i> var. <i>albifluvis</i> White River beardtongue	C	Uintah—south and southeast of Bonanza; Evacuation Creek, lower Parachute members, shale slopes; semi-barren MDS or PJ; 4,600–6,000 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Phacelia argylensis</i> Argyle Canyon phacelia	S	Duchesne—Argyle Canyon; Green River Formation; elevational range unknown.	None. Survey area out of range for this species.
<i>Schoenocrambe argillacea</i> Clay reed-mustard	T	Uintah—canyon rims and steep slopes; contact zone, Uinta-Green River formations; MDS; 5,000–5,650 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Schoenocrambesuffrutescens</i> Shrubby reed-mustard	E	Duchesne, Uintah—Big Pack Mountain, Wrinkles Road, Hill Creek Basin; Green River Formation, calcareous shale; MDS, PJS, or MB; 5,400–6,000 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Sclerocactus brevispinus</i> Pariette cactus	T	Duchesne, Uintah—Pariette Wash south of Myton; Uinta Formation, Wagonhound Member, alkaline clay; shadscale saltbush, mat-saltbush, greasewood community; 4,700–5,400 feet amsl.	None. Survey area is not within the USFWS <i>Sclerocactus</i> spp. potential habitat polygon.
<i>Sclerocactus wetlandicus</i> Uinta Basin hookless cactus	T	Duchesne, Uintah—widespread in BLM Vernal Field Office; alluvial benches Ouray to Carbon County line; MDS; 4,700–6,000 feet amsl.	None. Survey area is not within the USFWS <i>Sclerocactus</i> spp. potential habitat polygon.
<i>Spiranthes diluvialis</i> Ute ladies'-tresses	T	Daggett, Duchesne, Uintah—unconsolidated alluvium; riparian corridors, wetlands, wet meadows; 4,400–6,810 feet amsl.	None. Riparian habitat absent in the survey area.
<i>Thelesperma caespitosum</i> Uinta greenthread	S	Duchesne—West Tavaputs Plateau, north slope Uinta Mountains; Bishop Formation, white shale benches, ridge crests; cushion plant community above PJS and MB; 5,000–9,000 feet amsl.	None. Formation and associated soils do not exist in the survey area.
<i>Townsendia strigosa</i> var. <i>prolix</i> Strigosetownsendia	S	Duchesne—Duchesne Valley; recently described species.	None. Survey area out of range for this species.
<i>Yucca sterilis</i> Sterile yucca	S	Duchesne, Uintah—sandy soils near the Green River and Pariette wetlands; elevational range unknown.	Low potential. No known populations in the area. Formation and associated soils present in survey area.

**Notes:**

\* Status: C = federal candidate; E = federally endangered; S = BLM sensitive; T = federally threatened; O = Nonstatus, removed from status or potential status.

<sup>†</sup> Habitat: MB = montane brush; MDS = mixed desert shrub; PJ = pinyon-juniper; PJS = pinyon-juniper-sagebrush; SDS = salt desert scrub.

<sup>‡</sup> Occurrence: None = populations and/or suitable habitat for this species are unknown in survey area.

## **Appendix C**

### **Special-status Wildlife Species**

**Table C.1.** Federally Threatened and Endangered Wildlife Species, Utah Special-status Species, and Partners in Flight Species of Concern

Common Name; Scientific Name	Status	Habitat Association	Potential for Occurrence in the Project Area
<b>Birds</b>			
Abert's Towhee <i>Melospiza aberti</i>	PIF	Inhabits desert woodlands, mesquite thickets, riparian scrub, orchards and suburban areas in the Sonoran Desert region.	None. The project area is outside the known range for this species.
American Avocet <i>Recurvirostra americana</i>		Inhabits shallow, marshy, or muddy ponds, wetlands, and lake shores.	None. No suitable wetland habitat exists in the project area.
American White Pelican <i>Pelecanus erythrorhynchos</i>	WSC; PIF	Inhabits areas of open water, including large rivers, lakes, ponds, and reservoirs, with surrounding habitats ranging from barren to heavily vegetated sites. Typically nests on isolated islands in lakes or reservoirs; rarely nests on peninsulas.	None. In Utah, the species nests on islands associated with Great Salt Lake and Utah Lake. In northeastern Utah, the species is present as a transient on larger water bodies.
Bald Eagle <i>Haliaeetus leucocephalus</i>	WSC	In Utah, breeding occurrences are limited to five locations within four counties (Carbon, Daggett, Grand, and Salt Lake counties). Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts.	High. Observed in flight during survey. This species is not known to breed in Duchesne County.
Bell's Vireo <i>Vireo bellii</i>	PIF	Inhabits moist woodlands, bottomlands, and mesquite.	None. This species' range within Utah is restricted to the far southwestern corner.
Black Rosy-Finch <i>Leucosticte australis</i>	PIF	Breeds in high-elevation rocky tundra on mountain tops. Winters in grassland and open woodlands at lower elevations.	Moderate. No suitable breeding habitat in project area. Could occur in the project areas as a winter migrant.
Black Swift <i>Cypseloides niger</i>	PIF	Nests in steep cliffs with a damp microclimate, often due to waterfalls. Winter range is unknown but is presumed to be South America.	None. The only known breeding location in Utah for this species is in the Wasatch mountain range.
Black-necked Stilt <i>Himantopus mexicanus</i>	PIF	Inhabits wetlands, marshy areas, and shallow ponds with emergent vegetation.	None. No suitable wetland habitat exists in the project area.
Black-throated Gray Warbler <i>Setophaga nigrescens</i>	PIF	Open mixed or coniferous woodland with brushy undergrowth.	Moderate. Suitable woodland habitat is available in the project area.
Bobolink <i>Dolichonyx oryzivorus</i>	WSC; PIF	Inhabits mesic and irrigated meadows, riparian woodlands, and subalpine marshes at lower elevations (2,800–5,500 feet). Suitable breeding habitat for this ground nester includes tall grass, flooded meadows, prairies, and agricultural fields; forbs and perch sites also are required.	None. This species breeds in isolated areas of Utah, primarily in the northern half of the state. No suitable breeding habitat exists in project area.
Brewer's Sparrow <i>Spizella breweri</i>	PIF	Inhabits desert, shrubland/chaparral environments.	High. Portions of the project area are suitable habitat for Brewer's Sparrow.
Broad-tailed Hummingbird <i>Selasphorus platycercus</i>	PIF	Inhabits open woodland, especially pinyon-juniper, pine-oak, and conifer-aspen association; brushy hillsides; montane scrub and thickets.	High. Pinyon-juniper woodlands are abundant within the project area.



**Table C.1.** Federally Threatened and Endangered Wildlife Species, Utah Special-status Species, and Partners in Flight Species of Concern

Common Name; Scientific Name	Status	Habitat Association	Potential for Occurrence in the Project Area
Burrowing Owl <i>Athene cunicularia</i>	WSC	Inhabits desert, semi-desert shrubland, grasslands, and agricultural areas. Nesting habitat primarily consists of flat, dry, and relatively open terrain; short vegetation; and abandoned mammal burrows for nesting and shelter. In northeastern Utah, burrowing owls nest in desert/grassland habitats and are found in close association with prairie dog colonies.	Moderate. Prairie dog colonies encountered during survey.
Ferruginous Hawk <i>Buteo regalis</i>	WSC; PIF	Resides mainly in lowland open desert terrain characterized by barren cliffs and bluffs, pinyon-juniper woodlands, sagebrush, rabbitbrush, and cold desert shrub. Nesting habitat includes promontory points and rocky outcrops.	Moderate. This species is present in the West Desert and the Uinta Basin as a summer resident and a common migrant.
Gambel's Quail <i>Callipepla gambelii</i>	PIF	Inhabits desert shrublands and thickets, usually near permanent water sources. Restricted to Sonoran Desert region.	None. The project area is outside the known range for this species.
Grasshopper Sparrow <i>Ammodramus savannarum</i>	PIF	Prefers grasslands of intermediate height and is often associated with clumped vegetation interspersed with patches of bare ground. Other habitat requirements include moderately deep litter and sparse coverage of woody vegetation.	Low. Marginal habitat is available in the project area.
Gray Flycatcher <i>Empidonax wrightii</i>	PIF	Inhabits arid areas of sagebrush or pinyon-juniper woodlands.	High. Suitable pinyon-juniper woodlands are abundant within the project area.
Gray Vireo <i>Vireo vicinior</i>	PIF	Inhabits dry shrubby areas, chaparral, and sparse woodlands.	Moderate. Suitable habitat is available in the project area.
Greater Sage-Grouse <i>Centrocercus urophasianus</i>	FC; CAS; PIF	Inhabits upland sagebrush habitat in rolling hills and benches. Breeding occurs on open leks (strutting grounds), and nesting and brooding occur in upland areas and meadows in proximity to water and generally within a 1-mile radius of the lek. During winter, sagebrush habitats at submontane elevations are commonly used.	Low. The species is widespread but declining, with extant populations in Uintah and Daggett counties. No known leks occur within 2 miles of the project area.
Lewis' Woodpecker <i>Melanerpes lewis</i>	WSC; PIF	Inhabits open habitats, including pine forests, riparian areas, and pinyon-juniper woodlands. Breeding habitat typically includes ponderosa pines and cottonwoods in stream bottoms and farm areas. The species inhabits agricultural lands and urban parks, montane and desert riparian woodlands, and submontane shrub habitats.	Low. Habitat is available in the project area. In Utah, the species is widespread but it is an uncommon nester along the Green River. Breeding by this species has been observed in Ouray and Uintah counties, and along Pariette Wash.
Long-billed Curlew <i>Numenius americanus</i>	WSC; PIF	Inhabits shortgrass prairies, alpine meadows, riparian woodlands, and reservoir habitats. Breeding habitat includes upland areas of shortgrass prairie or grassy meadows with bare ground components, usually near water.	None. Habitat is not available in the project area. Widespread migrant in Utah. Potential nesting has been reported in Uintah County, but has not been confirmed.
Lucy's Warbler <i>Oreothlypis luciae</i>	PIF	Inhabits dense lowland riparian mesquite, cottonwood, and willow woodlands, mainly in the Sonoran Desert.	None. The project area is outside the known range for this species.
Mexican Spotted Owl <i>Strix occidentalis lucida</i>	FT; PIF	Found primarily in canyons with mixed conifer forests, pine-oak woodlands, and riparian areas; nests on platforms and large cavities in trees, as well as on ledges and in caves. Breeding and nesting season is approximately March through August.	None. The project area is not located within known potential or occupied habitat.



**Table C.1.** Federally Threatened and Endangered Wildlife Species, Utah Special-status Species, and Partners in Flight Species of Concern

Common Name; Scientific Name	Status	Habitat Association	Potential for Occurrence in the Project Area
Mountain Plover <i>Charadrius montanus</i>	FPR; WSC; PIF	In the Uinta Basin, small mountain plover populations breed in shrub-steppe habitat where vegetation is sparse and sagebrush communities are dominated by <i>Artemisia</i> spp., with components of black sage and grasses. Nest locations also vary with respect to topography (nests have been observed on flat, open ground; on the top or at the base of slopes; or very close to large rocky outcroppings).	Low. The only breeding population of mountain plover in Utah is located on Myton Bench and is not near the project area.
Sage Sparrow <i>Amphispiza belli</i>	PIF	Inhabits dry sagebrush/scrublands with sparse vegetation.	High. Significant portions of the project area contain suitable habitat for sage sparrow.
Sharp-tailed Grouse	PIF	Inhabits bunch-grass areas of the foothills and benches interspersed with deciduous shrubs.	Low. Range is limited to a remnant population in eastern Box Elder, Cache, and Morgan counties.
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i>	FE	Inhabits thickets, scrubby and brushy areas, open second growth, swamps, and open woodland. Nests primarily in swampy thickets, especially of willow, sometimes buttonbush, tamarisk, vines, or other plants, where vegetation is 13–23 feet or more in height. Tamarisk is commonly used in the eastern part of its range.	None. Habitat is not available in the project area.
American Three-toed Woodpecker <i>Picoides dorsalis</i>	WSC; PIF	Prefers coniferous forest, primarily spruce and balsam fir. Inhabits areas where dead timber remains after fires or logging. It is found less frequently in mixed forest, and occasionally in willow thickets along streams. Also found in high-elevation aspen groves, bogs, and swamps.	None. Habitat is not available in the project area.
Virginia's Warbler <i>Vermivora virginiae</i>	PIF	Inhabits dry woodlands, scrub oak brushlands, canyons, and ravines.	Moderate. Suitable woodland habitat is available in the project area.
Western Yellow-billed Cuckoo <i>Coccyzus americanus occidentalis</i>	FC; PIF	Present in riparian obligate and can be present in large tracts of cottonwood/willow habitats. However, this species has also been documented in lowland deciduous woodlands, alder thickets, deserted farmlands, and orchards. Breeding season is late June through July.	None. No riparian habitat exists in the project area.
<b>Fish</b>			
Bluehead sucker <i>Catostomus discobolus</i>	CAS	Occupies a wide range of aquatic habitats ranging from cold, clear mountain streams to warm, turbid rivers.	None. This species is present in the upper Colorado River drainage system.

**Table C.1.** Federally Threatened and Endangered Wildlife Species, Utah Special-status Species, and Partners in Flight Species of Concern

Common Name; Scientific Name	Status	Habitat Association	Potential for Occurrence in the Project Area
Bonytail chub <i>Gila elegans</i>	FE	<p>Critical habitat has been designated within the bonytail's historical ranges in the following sections of the Upper Colorado River Basin within the BLM Vernal Field Office (59 <i>Federal Register</i> 13374):</p> <p><u>Utah and Uintah counties in Utah; Colorado and Moffat counties in Colorado.</u> The Green River from the confluence with the Yampa River in Section 28, Township 7 North, Range 103 West (6th Principal Meridian) to the southern boundary of Dinosaur National Monument in Section 30, Township 6 North, Range 24 East (Salt Lake Meridian).</p> <p><u>Utah, Uintah, and Grand counties in Utah.</u> The Green River (Desolation and Gray canyons) from Sumner's Amphitheater in Section 5, Township 12 South, Range 18 East (Salt Lake Meridian) to Swasey's Rapid (Rivermile 12) in Section 3, Township 20 South, Range 16 East (Salt Lake Meridian).</p> <p>The bonytail is the rarest native fish in the Colorado River. Remnant populations are currently present in the wild in low numbers in Lake Mojave, and several fish have been captured in Lake Powell and Lake Havasu. The last known riverine area where bonytail was common was the Green River at Dinosaur National Monument, where 91 specimens were collected from 1962 to 1966. From 1977 to 1983, no bonytail were collected from the Colorado or Gunnison rivers in Colorado or Utah. However, in 1984, a single bonytail was collected from Black Rocks on the Colorado River. Several suspected bonytail were captured in Cataract Canyon from 1985 to 1987. Current stocking plans for bonytail identify the middle Green River and the Yampa River in Dinosaur National Monument as the highest priority for stocking in Colorado, and the plan calls for 2,665 fish to be stocked per year over the next 6 years (2003).</p>	None. This species is present in the upper Colorado River basin.
Colorado River cutthroat trout <i>Oncorhynchus clarkii pleuriticus</i>	CAS	Requires cool, clear water and well-vegetated streambanks for cover and bank stability; in-stream cover in the form of deep pools and boulders and logs is also important; adapted to relatively cold water, thrives at high elevations. Most remaining populations are fluvial or resident. Also present in lakes.	None. Habitat is not available in the project area.

**Table C.1.** Federally Threatened and Endangered Wildlife Species, Utah Special-status Species, and Partners in Flight Species of Concern

Common Name; Scientific Name	Status	Habitat Association	Potential for Occurrence in the Project Area
Colorado pikeminnow <i>Ptychocheilus lucius</i>	FE	<p>Critical habitat has been designated within the 100-year floodplain of the Colorado pikeminnow's historical range in the following sections of the Upper Colorado River Basin within the VFO (59 <i>Federal Register</i> 13374):</p> <p><u>Utah, Uintah, Carbon, Grand, Emery, Wayne, and San Juan counties in Utah; Colorado and Moffat counties in Colorado.</u> The Green River and its 100-year floodplain from the confluence with the Yampa River in Section 28, Township 7North, Range 103West (6th Principal Meridian) to the confluence with the Colorado River in Section 28, Township 30South, Range 19East (Salt Lake Meridian).</p> <p><u>Colorado and Rio Blanco counties in Colorado; and Utah and Uintah counties in Utah.</u> The White River and its 100-year floodplain from Rio Blanco Lake Dam in Section 6, Township 1North, Range 96West (6th Principal Meridian) to the confluence with the Green River in Section 4, Township 9South, Range 20East (Salt Lake Meridian).</p> <p>Colorado pikeminnow are presently restricted to the Upper Colorado River Basin and inhabit warm-water reaches of the Colorado, Green, and San Juan rivers and their associated tributaries. The pikeminnow recovery goals (USFWS 2002) identify occupied habitat of the pikeminnow as: the Green River from Lodore Canyon to the confluence of the Colorado River; the Yampa River downstream of Craig, Colorado; the Little Snake River from its confluence with the Yampa River upstream into Wyoming; the White River downstream of the Taylor Draw Dam; the lower 89 miles of the Price River; the lower Duchesne River; the upper Colorado River from Palisade, Colorado, to Lake Powell; the lower 34 miles of the Gunnison River; the lower mile of the Dolores River; and 150 miles of the San Juan River downstream from Shiprock, New Mexico, to Lake Powell.</p>	None. This species occurs in the upper Colorado River drainage system.
Flannemouth sucker <i>Catostomus latipinnis</i>	CAS	Adults can be present in riffles, runs, and pools in streams and large rivers, with the highest densities usually in pool habitat. Young live in slow to moderately swift waters near shoreline areas.	None. This species is present in the upper Colorado River drainage system.

**Table C.1.** Federally Threatened and Endangered Wildlife Species, Utah Special-status Species, and Partners in Flight Species of Concern

Common Name; Scientific Name	Status	Habitat Association	Potential for Occurrence in the Project Area
Humpback chub <i>Gila cypha</i>	FE	<p>Critical habitat has been designated within the humpback chub's historical ranges in the following sections of the Upper Colorado River Basin within the VFO (59 <i>Federal Register</i> 13374):</p> <p><u>Utah and Uintah counties in Utah; Colorado and Moffat counties in Colorado.</u> The Green River from the confluence with the Yampa River in Section 28, Township 7 North, Range 103 West (6th Principal Meridian) to the southern boundary of Dinosaur National Monument in Section 30, Township 6 North, Range 24 East (Salt Lake Meridian).</p> <p><u>Utah, Uintah, and Grand counties in Utah.</u> The Green River (Desolation and Gray canyons) from Sumner's Amphitheater in Section 4, Township 12 South, Range 18 East (Salt Lake Meridian) to Swasey's Rapid (Rivermile 12) in Section 3, Township 20 South, Range 16 East (Salt Lake Meridian).</p> <p>Present concentrations of humpback chub in the Upper Basin occur in canyon-bound river reaches ranging in length from 3.7 km (Black Rocks) to 40.5 km (Desolation and Gray canyons). Humpback chubs are distributed throughout most of the Black Rocks and Westwater canyons, and in or near whitewater reaches of Cataract Canyon (20.9 km), Desolation and Gray canyons (65.9 km), and Yampa Canyon (44.3 km), with populations in the separate canyon reaches ranging from 400 to 5,000 adults. The Utah Division of Wildlife Resources has monitored the fish community in Desolation and Gray canyons since 1989, and has consistently reported captures of age-0, juvenile, and adult <i>Gila</i>, including humpback chub, indicating a reproducing population. Distribution of humpback chubs within Whirlpool and Split Mountain canyons is not presently known, but it is believed that numbers of humpback chub in these sections of the Green River are low. The Yampa River is the only tributary to the Green River presently known to support a reproducing humpback chub population.</p>	None. This species is present in the Upper Colorado River Basin.

**Table C.1.** Federally Threatened and Endangered Wildlife Species, Utah Special-status Species, and Partners in Flight Species of Concern

Common Name; Scientific Name	Status	Habitat Association	Potential for Occurrence in the Project Area
Razorback sucker <i>Xyrauchen texanus</i>	FE	<p>Critical habitat has been designated within the 100-year floodplain of the razorback sucker's historical range in the following sections of the Upper Colorado River Basin within the VFO (59 <i>Federal Register</i> 13374):</p> <p><u>Utah and Uintah counties in Utah; Colorado and Moffat counties in Colorado.</u> The Green River and its 100-year floodplain from the confluence with the Yampa River in Section 28, Township 7North, Range 103West (6th Principal Meridian) to Sand Wash in Section 20, Township 11South, Range 18East (6th Principal Meridian).</p> <p><u>Utah, Uintah, Carbon, Grand, Emery, Wayne, and San Juan counties in Utah.</u> The Green River and its 100-year floodplain from Sand Wash at Rivermile 96 in Section 20, Township 11South, Range 18East (6th Principal Meridian) to the confluence with the Colorado River in Section 7, Township 30South, Range 19East (6th Principal Meridian).</p> <p><u>Utah and Uintah counties.</u> The White River and its 100-year floodplain from the boundary of the Uintah and Ouray Indian Reservation at Rivermile 18 in Section 21, Township 9South, Range 22East (Salt Lake Meridian) to the confluence with the Green River in Section 4, Township 9South, Range 20East (Salt Lake Meridian).</p> <p><u>Utah and Uintah counties.</u> The Duchesne River and its 100-year floodplain from Rivermile 2.5 in Section 30, Township 4South, Range 3East (Salt Lake Meridian) to the confluence with the Green River in Section 5, Township 5South, Range 3East (Uintah Meridian).</p> <p>In the Upper Colorado River Basin, above Glen Canyon Dam, razorback suckers are found in limited numbers in both lentic (lake-like) and riverine environments. The largest populations of razorback suckers in the upper basin are found in the upper Green and lower Yampa rivers (Tyus 1987). In the Colorado River, most razorback suckers occur in the Grand Valley near Grand Junction, Colorado; however, they are increasingly rare. Osmundson and Kaeding (1991) reported that the number of razorback sucker captures in the Grand Junction area has declined dramatically since 1974. Between 1984 and 1990, an intensive collecting effort captured only 12 individuals in the Grand Valley. The wild population of razorback suckers is considered extirpated from the Gunnison River.</p>	None. This species is present in the upper Colorado River drainage system.
Roundtail chub <i>Gila robusta</i>	CAS	Adults inhabit low- to high-flow areas in the Green River; young are present in shallow areas with minimal flow.	None. This species is present in the upper Colorado River drainage system.
<b>Mammals</b>			
Big free-tailed bat <i>Nyctinomops macrotis</i>	WSC	Inhabits rocky areas in rugged country. Has been observed in lowlands of river floodplain-arroyo association; also in shrub desert and woodland habitats. Roosts in rock crevices (vertical or horizontal) in cliffs; also in buildings, caves, and occasionally tree holes. Winter habits unknown.	Low. The species is rare in Utah. Individuals may be present in northern Utah occasionally.

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Common Name; Scientific Name	Status	Habitat Association	Potential for Occurrence in the Project Area
Black-footed ferret <i>Mustela nigripes</i>	FE	Found in semiarid grasslands and mountain basins. It is found primarily in association with active prairie dog colonies that contain suitable burrow densities and colonies of sufficient size.	None. The distribution of this species is limited to a nonessential experimental population reintroduced into Coyote Basin, Uintah County since 1999.
Canada lynx <i>Lynx canadensis</i>	FT	Primarily present in Douglas-fir, spruce fir, and subalpine forests at elevations above 7,800 feet. The lynx uses large woody debris, such as downed logs and windfalls.	None. If extant in Utah, this species is most likely present in montane forests in the Uinta Mountains.
Fringed myotis <i>Myotis thysanodes</i>	WSC	The species is widely distributed throughout Utah, but is not very common in the state. It inhabits caves, mines, and buildings, most often in desert and woodland areas.	Low. The species is widely distributed but uncommon throughout Utah.
Kit fox <i>Vulpes macrotis</i>	WSC	Inhabits open prairie, plains, and other desert habitats primarily in the western portion of the state.	Low. The species is widely distributed in the western portion of Utah, but is rare in Duchesne County.
Spotted bat <i>Euderma maculatum</i>	WSC	Inhabits desert shrub, sagebrush-rabbitbrush, pinyon-juniper woodland, and ponderosa pine and montane forest habitats. It uses lowland riparian and montane grassland habitats. Suitable cliff habitat appears to be necessary for roosts/hibernacula. Spotted bats typically do not migrate, and instead use hibernacula to maintain a constant temperature above freezing from September through May.	Low. The species is potentially present throughout Utah; however, no occurrence records exist for the extreme northern or western parts of the state. Known presence has been reported in northeastern Uintah County.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	WSC	Inhabits a wide range of habitats from semi-desert shrublands and pinyon-juniper woodlands to open montane forests. Roosting occurs in mines, caves, abandoned buildings, rock cliffs, and occasionally tree cavities. Foraging occurs well after dark over water, along margins of vegetation, and over sagebrush.	Low. The species is present in Duchesne and Uintah counties. Relative to the study area, one individual was collected at the Ouray National Wildlife Refuge in 1980. Roosting habitat could occur in areas where rock cliffs and caves are present.
White-tailed prairie dog <i>Cynomys leucurus</i>	WSC	Inhabits grasslands, plateaus, plains and desert shrub habitats. White-tailed prairie dogs form colonies or "towns," and spend much of their time in underground burrows, hibernating during the winter. Generally found at altitudes ranging between 5,000 and 10,000 feet in desert grasslands and shrub grasslands.	High. Prairie dogs were observed in the project area during survey.
<b>Reptiles and Amphibians</b>			
Northern leopard frog <i>Rana pipiens</i>	FPE	Inhabits a variety of aquatic habitats, but may forage some distance from water. The species is inactive during the winter and takes refuge in damp burrows or underwater. The species is fairly common and widespread throughout Utah, but populations may be declining.	None. Habitat is not available in the project area.
Red cornsnake <i>Elaphe guttata</i>	WSC	Habitat includes pine woodlands, brushy fields, open hardwood forests, mangrove thickets, barnyards, abandoned buildings, areas near springs, old trash dumps, and caves.	None. Habitat is not available in the project area.

**Table C.1.** Federally Threatened and Endangered Wildlife Species, Utah Special-status Species, and Partners in Flight Species of Concern

Common Name; Scientific Name	Status	Habitat Association	Potential for Occurrence in the Project Area
Smooth greensnake <i>Opheodrys vernalis</i>	WSC	Habitats include meadows, grassy marshes, moist grassy fields at forest edges, mountain shrublands, stream borders, bogs, open moist woodland, abandoned farmlands, and vacant lots.	None. Habitat is not available in the project area.

Notes:

**Federally Listed Species:**

FE = Federally listed as endangered

FPE = Species petitioned for listing as threatened or endangered

FPR = Species proposed for listing as threatened or endangered

FT = Federally listed as threatened

FC = Candidate species for federal listing

**Utah State Sensitive Species:**

CAS = State Conservation Agreement Species

WSC = Wildlife Species of Concern

PIF = Partners in Flight species of concern, Utah

## **Appendix D**

### **Cultural Resources Report and Survey Dates**



*Petroglyph Operating Company's Proposed Oil Wells Ute Tribal 31-08, 31-11, 31-14, 31-15, 32-07, 33-05, 36-01, 36-03, 36-04, 36-11, 36-14, and 36-15 (UO\_FY14\_087)*

Well #	Class 1 Report	Original Survey Date/Company	State Report Number	Results
33-05	MOAC Report No. 14-016	2014 – MOAC 2011 - Montgomery and Jackson	U-14-MQ-0080i U-11-MQ-0279i	No sites in area
31-08 31-11 31-14 31-15 32-07 36-01 36-03 36-04 36-11 36-14 36-15	MOAC Report No. 14-009	1996 - An Independent Archaeologist 1996 - An Independent Archaeologist 1997 - An Independent Archaeologist 1997 - An Independent Archaeologist 1998 - An Independent Archaeologist 2004 – MOAC 2004 - MOAC	U-96-AY-0383 U-96-AY-0384 U-97-AY-0537 U-97-AY-0538 U-98-AY-0201 U-04-MQ-0541 U-04-MQ-1473	42Dc1124 – lithic scatter with a stone circle, ineligible because it lacked potential for buried and intact cultural remains and the artifact assemblage was minimal. Occurs 250 feet southwest of well 36-15 location. All other locations have no sites in area